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Promotion and Management of Marine Fisheries in Kenya

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Abstract

With an estimated 500 km long coastline and variety of marine and wetland habitats, the marine sub-sector is host to nearly 12,000 fishers, out of which 95% are artisanal. Fishing is carried out in the near shore areas using simple boats and is heavily dependant on the monsoon wind patterns. The annual catch has fluctuated between 4,000 and 10,000 MT for the last 20 years with some areas reporting overfishing. While sport fishing and aquaculture are also important economic activities on the Kenyan coast, the offshore fisheries zone, which is believed to contain vast and valuable stocks of fishery resources, is exploited by vessels from Distant Water Fishing Nations.

Apart from fishing, the Kenyan coastal zone hosts a multiplicity of other demands ranging from agriculture to tourism, shipping and ports, marine dredging, offshore oil exploration, curio trade, mining and fossil coral extraction and mangrove harvesting. All these demands on the coastal zone have led to, inter alia, declining fishery production, habitat destruction, resource use conflicts and a decline in

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biodiversity. Resource-overuse, tourism, prawn trawling and salt production firms have been blamed for the decline in fish catches.

There is a lack of enforcement capacity necessary to mitigate the decline in fish catches caused by overfishing and use of destructive gear. Against this backdrop, the encouragement of responsible fishing practices and co-management structures, curtailment of destructive fishing methods, and the development of Marine Protected Areas have been suggested. Nonetheless, the incorporation of traditional fisheries management with formal regime through the Beach Management Unit (BMU) is seen as a lasting solution.

In recognition of the fundamental pre-requisite for fishery development, the Fisheries Department's draft policy provides for better coordination between fishery management and research. The policy too has an important reform agenda, although the cost of implementation is colossal. Nevertheless, better collaboration between stakeholders is expected to strengthen the synergies and make management more effective.

I. Environmental and socio-economic background

The Kenyan coast is located between latitudes $1^0$41'S and $5^0$40'S. The coast has a narrow continental shelf with an estimated area of 19,120 km^2 that stretches from its border with Tanzania to the South and Somalia to the North (Fig.1).

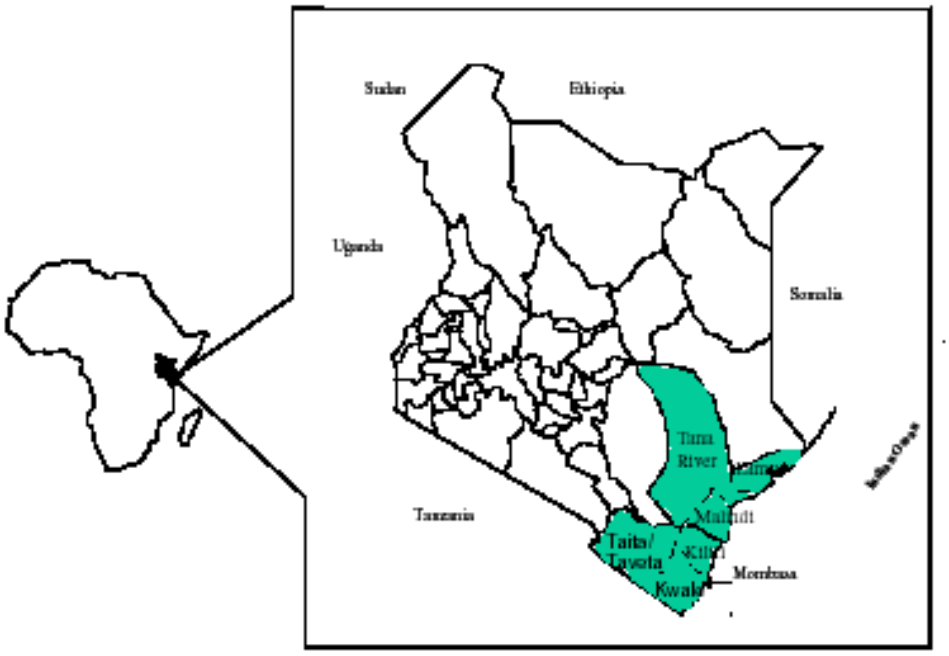

Figure 1. Map showing the Kenyan Coast province with districts marked in green[1]

The width of the continental shelf is less than 5 km, but extends to almost 60 km out to sea near the mouth of Tana River and near Lamu. The total area of the Kenyan EEZ is about 230,000 sq km.[2] A variety of marine and wetland habitats occur along the Kenyan coast including coral reefs, sea grass beds, mangroves and salt marshes.[3]

The Inter-Tropical Convergence Zone (ITCZ) (Fig.2) influences the weather conditions on the Kenyan coast.

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1 D. Malleret-King et al., 'Review of marine fisheries for Kenya: Understanding fisheries associated livelihoods and constraints to their development in Kenya and Tanzania', (FMSP project R8196, 2003).

2 N.K. Gitonga/R. Achoki, 'Fiscal reforms for Kenya fisheries'. Paper prepared for FAO workshop on fiscal reforms for fisheries (Rome, Italy: 13-15 October 2003).

3 UNEP, 'Eastern Africa atlas of coastal resources' (Nairobi, United Nation Environment Program, 1998).

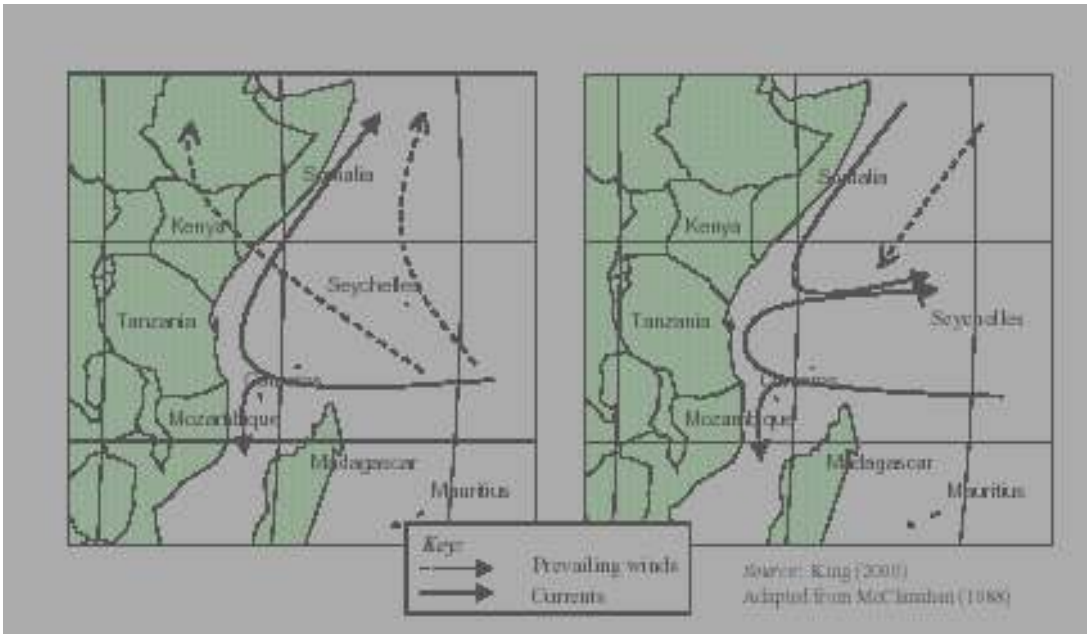

Figure 2. Seasonality of wind and current patterns.

This is a zone of low pressure, which moves north and south of the equator according to the movement of the sun and the influences of the monsoon. The South East monsoon winds (*kusi*) and Northeast monsoon winds (*kaskazi*) alter sea temperatures, rainfall, wind and sea conditions. The South East monsoon winds occur from April to October and are characterized by cool temperatures (mean = 26.4^0C, max = 30^0C), long heavy rains (55-272 mm/month), rough seas and strong winds (0.5-0.75 m/s); while the North East monsoon occurring from November to March is characterized by warm temperatures (mean = 28.4^0C, max = $31\text{-}32^0$C), short rains (8-84 mm/month), calm sea and steady light winds (<0.25 m/s).[4]

Marine fishing in Kenya is mostly artisanal and is carried out in the near shore areas. The artisanal fish catch is reduced during the South East Monsoon winds[5], as access to fishing grounds is restrained by strong winds and general rough sea conditions.

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4 UNEP, ibid.; D.O Obura, '*Kenya*', **42** (12) *Marine Pollution Bulletin* (2001), 1264-1278.

5 T.R. McClanahan, '*Seasonality in East Africa's coastal waters*'**44** *Marine Ecology Progress Series* (1988), 191-199; J. Rubens, 'An Analysis of the benefits and costs of marine reserves regulations at Diani, Kenya', MSC Dissertation, (Department of Marine Science and Coastal Management,

During the North East Monsoon winds, fishing conditions are enhanced by favourable climatic conditions. In addition, the southerly flow of the upwelling nutrient rich waters along the Somali coast results in high productivity in the water column and the subsequent increase in fisheries yields.[6] During this period, fish are generally more abundant and large in size especially in the Lamu Archipelago. The southern coast has low productivity due to the fact that the East African coast is a downwelling area, which is characterized by low nutrient contents.[7]

1. State of the relevant fisheries resources

Kenya's fisheries' resources comprise of freshwater (lakes, rivers and dams) and marine sub-sectors. However, Lake Victoria is the main source of fish production in the country as it contributes over 90% of the total Kenyan fish landings. The rest is shared among other fresh water sources and the marine sub-sector (Fig 3).

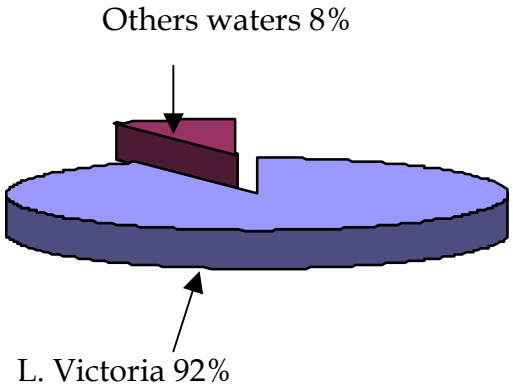

Figure 3. L. Victoria contribution to the total fish production in Kenya.

The fisheries contribution to the country's economy is through employment creation, generation of income and foreign exchange earnings. The fisheries sector also

University of Newcastle, UK (1996); D. Malleret-King, 'A food security approach to marine protected area: Impacts on surrounding fish communities', PhD thesis, University of Warwick, UK (2000).

6 J. Kemp, 'East Africa marine ecoregion biological reconnaissance', (Annex 1. Report to WWF Eastern Africa Programme, 2000), p. 90.

7 B.E. Bell, 'Marine Fisheries', in W.T. Morgan (ed.), *East Africa: Its people and resources* (London: Oxford University Press, 1972), pp 243-244; McClanahan, 'Seasonality in East Africa's coastal waters.'

promotes other auxiliary industries such as net making, packaging material industries and boat building among others. The sector makes a small but increasing contribution to Kenya's GDP. Between 1971 and 1981, the sector accounted for an average 0.2% of the country's annual GDP. This increased so that by 1989/90 fishing accounted for about 2% of the GDP from the non-monetary economy and 4.4% from the monetary sector's GDP. In 2004, the sub-sector accounted for 5% of the GDP. It is approximated that the country earns about 4 billion (approx. US$ 50 million) Kenya shillings (Kshs) in foreign exchange and the fishers over 7 billion Kshs.

The relatively small but increasing contribution to the national GDP notwithstanding, fishing industry is the lifeline for the Kenyan riparian and coastal communities. In 1995, for instance, the fisheries department estimated that 798,000 Kenyans were, directly or indirectly, supported by the sector in comparison to 720,000 in 1993. In the same year (1995), there were 34,000 fishermen with an estimated 238,000 dependants and about 526,000 other people engaged in the provision of support and ancillary services such as trade in fish inputs, fish handling, processing and marketing.

In 1965, a total of 17,275 tonnes of fresh and marine water fish were landed in Kenya. Fish landing increased from 22,810 tonnes in 1975 to 191,808 tonnes in 1990. However, in 2000, the quantity decreased from 208,164 tonnes in 1999 to around 200,000 metric tonnes (table 1).

Fish production (Metric tonnes) and value ('000Kshs) 1996-2002		
	Quantity (M. Tonnes)	Value ('000 Kshs)
1996	180,984	6,667,945
1997	164,044	4,714,093
1998	179,413	6,813,867
1999	214,709	7,753,584
2000	202,651	7,964,301
2001	164,276	7,918,179
2002	128,276	7,668,371

Table 1. Total fish production and value in Kenya: 1996 - 2002[8]

The annual average total production of fish in Kenya is estimated at 200,000 metric tonnes (MT). The fisheries sector contributes about 5% to the country's gross domestic product (GDP). In 2004, the sector raised 8 billion Kshs, which supported the livelihood of about 500,000 people.[9] The fisheries sector employs about 50,000 people who directly benefit from it, mainly from fishing, fish trading on local and international markets and employees in various sections of the fisheries industry. Besides being a rich source of protein especially for riparian and coastal communities, the fisheries resources are also important for the preservation of culture, national heritage, and recreational purposes.

Freshwater fisheries

The major freshwater commercial species include Nile Perch (found mainly in L. Victoria and a small percent in L. Turkana), Tilapia and freshwater sardines locally known as *omena,* with the Nile Perch contributing to over 50% of L. Victoria fish landings. Lake Victoria is shared among the three East African Partner States (Kenya, Uganda and Tanzania) with Kenya enjoying the smallest share of 6% and Tanzania the largest share of 49%. Kenya's portion is very productive due to the many rivers flowing into the Lake.

There has been a decline in fish production. Lake Victoria alone accounted for 96.2% of the total fish landed in the year 2000. In 2002, the production had dropped to 92%[10]. However, the quantity of fresh water fish landed decreased from 208,164 tonnes in 1999 to 204,430 tonnes in 2000, a decline of 1.8%. In Lake Naivasha, a record 452 tonnes of fish was registered in 1999 compared to only 14 tonnes in 2000. The reason for the overall decline in fish landed is attributed to not only overfishing but also to the ban on Kenyan fish exports to the European Union markets due to the

8 Gitonga/Achoki, 'Fiscal reforms'.

9 Fisheries statistics, 2004.

10 Gitonga/Achoki, 'Fiscal reforms'.

presence of Salmonella, cholera outbreaks and the use of pesticides for fishing in Lake Victoria.[11] The stringent safety and quality conditions for Kenya, which followed the ban, saw a 68% decline in fish exports.[12]

The fish industry is now governed directly by at least six sets of standards operated through the Fisheries Department and the Kenya Bureau of Standards, although the most significant regulations for the fisheries sector are those of the EU directives 91/493/EEC and 98/83/EEC. The EU Directive 91/493/EEC lays down the requirements for handling and marketing fishery products based on Hazard Analysis Critical Control Point (HACCP) principles. It defines the practices governing fish production, handling, processing, packaging, and transporting of fishery products destined for the EU. It also imposes standards regarding the construction of buildings, equipment, purification tanks, and storage tanks intended for holding fish prior to export. On-premise laboratories, strict record keeping, and accurate labelling are other requirements.

Marine fisheries

Kenya's known marine inshore fishing grounds include the rich inshore grounds around the Lamu Archipelago, Ungwana Bay, the North Kenya Bank and the Malindi Bank. The bulk of the marine catch is taken in shallow inshore waters mainly by artisanal fishers using simple boats and gears including gillnets, shark nets, hook-and-line and traps. The main species caught along the Kenyan coast are reef/sea grass/sand associated demersal fish species constituting 38% of the catch.[13] These include parrot fish (Scaridae), Scavengers (including Lethrinidae, Lutjanidae and Haemuldae) and rabbit fish (Siganidae).[14] Pelagics including King fish, Jacks and Tuna, though less than demersals are also landed.[15] Other fish landed include sharks

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11 R.O. Abila, 'Food Safety in Food Security and Food Trade Case Study: Kenyan Fish Exports', IFPRI, Washington DC (2003).

12 Ibid.

13 UNEP, 'Eastern Africa atlas'.

14 Ibid.; Malleret-King, 'A food security approach'; T.R. McClanahan/S. Mangi, '*Gear-based management of a tropical artisanal fishery based on species selectivity and capture size*', **11** *Fisheries Management and Ecology* (2004), 51-60.

15 Ibid.

and rays. Apart from these, crustaceans especially crabs, prawns and spiny rock lobsters, octopus and squids are exploited.[16] A few freezer trawlers fish the shallow waters of Ungwana Bay for shrimp, but trawling opportunities are limited because coral outcroppings cover most of the nearshore floor. Additionary, the shelf slopes steeply to depths of a hundred fathoms or more within a few kilometres of the reef.

The annual catches have fluctuated between 4,000 and 10,000 MT over more than a 20-year period. In the 1970s, two surveys were carried out to estimate marine fishery potential. The surveys estimated the potential yield of demersals fish outside the reef at 5,000 – 7,500 MT. However, the surveys did not test distribution and abundance of tropical water resources and were also a part of larger regional surveys that did not concentrate on details of Kenya's marine fishery resource. An analysis of long-term (1978-2001) marine fishery data showed that Kenyan reefs produced an estimated 2-4 MT/km^2/year of demersal fish.[17]

The prawn fishery from which approximately 400 MT are landed each year are fished by commercial trawlers from the two fishing grounds with brackish waters. This sometimes causes conflict between them and artisanal fishers, when the latter's nets are destroyed.

Information about the status and potential of the marine fishery varies. While the 1997 and 2001 National development plan estimated the coastal marine fisheries in the EEZ for Tuna and Tuna like species at 200,000 MT, more recent studies suggest a figure of between 100,000 MT and 140,000 MT for highly migratory species.[18] Production beyond the reef has also been estimated at 5000 to 8000 MT.[19] The Fisheries Department estimates the total marine potential at 350,000MT/year while

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16 D. Malleret-King, 'Les systemes de productions de agriculture et pecheurs de biga, petite communaute de pecheurs', DESS Development Agricole-Memoire (Paris 1. la Sorbonne, Institut d' Etude du Developpement Economique et Sociale (1996); ibid.

17 B. Kaunda-Arara et al., '*Long-term trends in coral reef fish yields and exploitation rates of commercial species from coastal Kenya*', **2** *Western Indian Ocean J. Mar. Sci.* (2003) 105-116.

18 G. Habib, 'Kenya fisheries sector report and rationalisation paper' (unpublished paper) (2002), pp. 82.

19 S.A Iversen, 'Kenyan marine fish resources in waters deeper than 10 m by R/V Fridgjof Nansen', *Proceedings of the NORAD-KENYA seminar to review the marine fish stocks and fisheries in Kenya* (Mombasa, 13-15th March 1984).

FAO (1990) estimated the potential annual marine catch at 20,000 MT with the reef fisheries at 12,000 MT. It is therefore apparent that information from different sources gives varying picture of the status of the marine fisheries.

In spite of varying figures about Kenya's marine fish potential, research done so far[20] in the south coast Kenya indicate that the fisheries resources are overexploited and that they are declining. Diani is quoted as one of the areas that are most over fished.[21] This was evident by high levels of sea urchins (*Echinometra mathaei*) indicating a depletion of sea urchin predators; the orange striped triggerfish (*Balistsapus undulates*) and the tripletail wrasse (*Cheilinus trilobatus*).[22] The overfishing of triggerfish from Kenya's coral reefs has been estimated to lead to a 500% increase in sea urchins.[23]

Catch data carried out at 8 landing sites from Kenyatta Beach to Kinondo between 1995 and 1999 showed a decline in fish catch in spite of constant effort.[24] In Diani, the catch per day per fisherman varies between 4 to 6 kg at the most productive site during the most productive season, while it is less than 1 kg during the least productive season.[25]

The offshore fisheries zone is exploited by vessels from Distant Water Fishing Nations (DWFNs). There is little information concerning the status of the Kenyan EEZ in spite of an increase in offshore fisheries in the region beginning in the early 1990s.

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20 McClanahan/Mangi, 'Gear-based management'; T.R. McClanahan, '*Fish predators and scavengers of the sea urchin Echinometra mathaei in Kenya coral-reef marine parks*' **43** *Env.biol.Fish* (1995), 187-193; Rubens, 'An Analysis of the benefits and costs'; Malleret-King, 'Les systemes de productions'; Malleret-King, 'A food security approach'; H. Glaesel, 'Fishers, parks and power: The socio-environmental dimensions of marine resource decline and protection on the Kenyan coast', PhD thesis, University of Wisconsin- Madison (1997); A. King, 'Managing without institutions: The role of communication networks in governing resource access and control', PhD thesis, University of Warwick, UK (2000).

21 T.R McClanahan/B. Kaunda-Arara, '*Fishery recovery in a coral-reef marine park and its effects on the adjacent fishery*', 10(4) *Cons. Biol*. (1996), 1187-1199.

22 T.R. McClanahan, 'Fish predators and scavengers'.

23 T.R. McClanahan/N.A.Muthiga, '*Changes in Kenyan coral reef community structure and functioning due to exploitation*', **166** *Hydrobiologia* (1988), 269-276.

24 McClanahan/Mangi, 'Gear-based management'.

25 Obura, 'Kenya'; King, 'Managing without institutions'; Rubens, 'An Analysis of the benefits and costs'.

Vessels and gear

Estimates of the number of fishers for the whole coast vary from 5,000 to 12,000 fishers.[26] The more recent data from the FiD indicate that there are currently 10,154 fishermen on the Kenyan coast, over 95% being artisanal.[27] The number of people depending directly on fishing varies between 25,000 and 56,000, excluding fish traders and processors who are estimated at 1,000.[28]

Only 10% of the fishing vessels are motorized. Consequently, the main fishing vessels comprise of non-motorized dugout canoes, outrigger canoes and dhows. While information on the total number of powered boats is not collected by the Fisheries Department, anecdotal information indicates that there are 32 purse seiners and 75 longliners, operating under fishing licenses issued by the FiD, with no obligations to land, tranship or declare catches in the country. This arrangement limits the country's benefits from its EEZ fishery especially from value-added activities associated with transhipment, landings for processing or even trade in by-catch. Currently there is only one Kenyan long line vessel, which started operating in the middle of 2005. According to the Seychelles Fishing Authorities tuna bulletin for the year 2004, a cumulative 100 purse seiners transhipped 51,404 tonnes of tuna through the port of Mombasa.

The gear used ranged from traps, hand lines, fence traps, spears, sticks, nets, and spear guns. There is no information at the national level about gear distribution or catch per gear. However, at Diani, spear guns and beach seines constituting 39.3% and 25.9% respectively of the available gear were most widely used.[29] In addition, out of the five gears used at these sites, spear guns and beach seines account for 80% of the catch. Recent studies in the same area indicate that spear guns and beach

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26 UNEP, 'Eastern Africa atlas'.

27 Ndegwa, pers. comms.

28 D.O. Obura, 'Status report Kenya', in Coral reef degradation in the Indian Ocean', *Status report and project presentations*, (Stockholm, CORDIO/SAREC) (1999), pp. 33-36.

29 McClanahan/Kaunda-Arara, 'Fishery recovery'.

seines are still widely used, constituting 46.2% and 24.3% respectively.[30] Under the Fisheries Act, the use of both spear gun and beach seine is prohibited.

On the basis of fisheries statistics, the average marine fish and other marine products catch from 1991 to 2000 was estimated at 5,847 tonnes annually. Nearly 50% of the total catch comprised of crustaceans, sharks, rays, beche-de-mer (sea cucumbers), octopus and squids. The total catch of squids came from Mombasa.[31] However, catch statistics of the Fisheries Department are unlikely to be reliable as not all the catch especially from night fishing is recorded.[32]

Fish and fish products export

Kenya has a long history of fishing. Nonetheless, until 20 years ago nearly all fish caught in Kenya were consumed within the country. Kenya only started exporting fish in the early 1980s when fish processing factories were established around Lake Victoria.

About 92% of harvested fish comes from Lake Victoria, and the rest from the Indian Ocean (4%), inland lakes and rivers (3%) and aquaculture (1%). Nile perch, which constitutes about 50% of the fish caught in Kenya, is the main export earning about US $50 million annually. Other commercially important species in the domestic market are the small sardine fish called *dagaa* (30%) and tilapia (10%). Of the 18 fish processing and exporting firms now in Kenya, 10 specialize in Nile perch products while 7 handle marine products such as shrimp, other crustaceans and tuna.[33]

There exists enormous fishing potential in the Kenyan Exclusive Economic Zone (EEZ) whose resources, as already mentioned, are currently being exploited by Distant Waters Fishing Nations (DWFNs) without commensurate returns from the resource.[34] Kenya has not entered into any fishing access agreements with DWFNs. Currently, marketing of fish to the EU, the main importer of Kenyan fish, is carried

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30 I. Wanyonyi, et al., 'Linking socioeconomic monitoring to reef fisheries management', Manila, Poster Presented at ITMEMS (March 2003).

31 Malleret-King et al., 'Review of marine fisheries'.

32 King, 'Managing without institutions'.

33 Abila, 'Food safety'.

34 Gitonga/Achoki, 'Fiscal reforms'.

out through bilateral agreements with individual EU Member States. Fish exports for the year 2004 are as tabulated below.

Table 2. Kenyan Fish Exports for the year 2004

Product	Weight (Tonnes)	Value (Million Kshs)	Destinations
Tuna	10,596	475	Italy & Spain
Lobsters	131	61	India, Japan, Greece, UK., Hong Kong, Seychelles & Italy
Prawns	234	176	UK., Netherlands, Spain & Italy
Octopus	504	102	Netherlands, Italy, Portugal & France
Cuttlefish	17	33	Greece & India
Live Lobsters	5	19	Hong Kong, U.A.E., S. Africa
Live Crabs	12	1.3	Singapore, U.A.E., Lebanon, S. Africa

Source: Provincial Statistics office, Mombasa

The fish trade is hampered by poor road networks to production sites and lack of cooling infrastructure for preservation. Since there are no auction systems for fish in Kenya, this has contributed to high price differentials across locations. These factors translate into significant post harvest losses, which in turn limit market expansion efforts.

Sport fishing as a recreational activity has been taking place all along the Kenyan Coast within the confines of various registered clubs and at times on an individual basis. The FiD aimed at streamlining it to improve professionalism, create employment, generate income through tourist attraction, increase revenue and above all, exploit the resource on a sustainable basis. Fishing takes place up to 15 nautical miles along the entire coastline. Different species are caught at different seasons of the year. Sailfish are present in sufficient numbers from October through March

while Blue Marlin and Stripped marlin from 25 kgs upwards in weight are present from January through March.

There are about 400 sport fishermen along the coastline. However, the number is known to be higher as a number of them register as ordinary fishermen. The most fished marine life for this action are mainly Big Eye Tuna, Long tail Tuna, Skipjack Tuna, Yellow fin Tuna, Wahoo, Barracuda, Cobia, Dolphin, Kingfish, Blue Marlin, Stripped Marlin, Sailfish, Hammerhead Shark, Mako Shark, Silvertip Shark, Tiger Shark, Broadbill Swordfish, Blue Fin Trevally, Giant Trevally and Rainbow Runner. According to available statistics (2002), Malindi had the highest number of fish caught followed by Watamu (Table 2).

Table 3. Sport fish catches for the year 2000

Landing Point	Number of Fish Caught	Weight (Kgs)	Boat-Days
Malindi	5228	83731	1078
Lamu	627	7186	75
Watamu	4850	39623	-
Kilifi	467	3919	179
Mtwapa	1033	7866	315
Diani	-	-	-
Shimoni	1777	11721	-

Ornamental fishing in the country is also at low level though with a high potential. Some of the most exported species include Surgeonfish, Angelfish, Blennies, Butterfly fish and Wrasses. The earnings from aquarium fish range from US $3 to US $50 per fish depending on the species. In the year 2004, Kenya exported over 102,000 live aquarium fish worth slightly over 16 million shillings to Europe, Asia and North America.[35]

[35] Provincial statistics, 2005.

Aquaculture

Aquaculture in Kenya includes fresh water, fish farming and Mariculture. Kenya's ministry of Livestock and Fisheries Development recognizes that fisheries play an important role in sustaining rural and urban livelihoods in Kenya.[36] During the preparation of Poverty Reduction Strategy Paper for the Agriculture sector, aquaculture was targeted as one of the core activities that can contribute to poverty alleviation in rural Kenya.

In order to realise this objective, the ministry is currently encouraging and facilitating sharing of information among fish farmers, researchers and extension officers through field days and farmer training sessions. In this regard, the Ministry is focusing on commercial fish farming through the application of research results in the field with the use of contact farmers. The ministry has taken these steps in order to reduce fishing pressure in light of declining fishing sources at the backdrop of an increasing population and multiple demands on other natural resources.[37]

2. *Overview of multiple demands on the coastal zone and the socio-economic relevance of the fisheries*

Demand on coastal resources range from fishing, agriculture, tourism, shipping and ports, marine dredging, offshore oil exploration, curio trade, mining and fossil coral extraction among others. While the economy in the urban centres is characterized by maritime and harbour activities, commerce and tourism, in the rural areas, demand for coastal resources arise from the need for agricultural land, small-scale enterprises, retail services and fisheries.

Marine fisheries in Kenya are based on a small number of species, the most important being demersals caught by artisanal fishermen operating between the shoreline and the reef. Of the national total annual fishery production in 1998, only 7.4% came from marine waters.

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36 Gitonga/Achoki, 'Fiscal reforms'.

37 Ibid.

In the year 2004, the artisanal production was 638,636 kgs valued at 608,339,414.00 Kshs representing approximately 4% of the country's total annual landings. According to fish landing records, Mombasa accounted for 46.6% of the mean fish catch between 1988 and 1992 followed by the Tana River, Lamu, Kwale and Kilifi, respectively. The decline in marine fish landings is attributed to an increase in human population, destructive fishing methods and habitat (coral and mangrove) destruction.

Certain fishing methods are of great concern due to their destructive and indiscriminate nature.[38] Beach seine is known to damage coral reefs because its small mesh size collects fish indiscriminately and it involves walking and overturning corals.[39] Apart from beach seines, the use of dynamite has been reported in some areas. The use of destructive gear together with poaching (meat, eggs and oil) and beach development has reduced sea turtle populations to critical levels.[40] Trawling, long-line fishing and drift netting result in the catch of many fish species besides the target species. The by-catch, which is not usually utilized, comprises 70% of the marine catch.[41]

The nine mangrove species found in Kenya (Ceriops taga, Rhizophora mucronata, Sonneratia alba, Avicennia marina, Bruguira gymnorrhiza, Lumnitzera racemosa, Heritiera littolalis, Xylocarpus granatum and Xylocarpus mollucensis) encounter various threats.[42] Mangroves are exploited for firewood, poles for building, dye, floaters and timber among other uses. However, over exploitation led to the banning of mangrove export in 1982 and later for domestic use in 1997. In spite of the bans,

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38 A. Caroly Shumway, '*Forgotten waters: Freshwater and marine ecosystems in Africa. Strategies for biodiversity conservation and sustainable development*' (Boston University, 1999).

39 Ibid.

40 G. Okemwa et al., '*The conservation status of sea turtles in Kenya*' (MTN, 2004), 105.

41 E. Mueni/J. Mwangi, 'A survey on the use of turtle excluder device (TED) in trawlers along the Kenyan coast', KWS Technical Series (2001).

42 J.G. Kairo/J. Bosire, 'Planting and management of mangroves', in A.W. Wamukota (ed.), '*Proceedings of the exposure & exchange workshop on marine life management*', Mombasa: Plaza Beach Hotel (10th – 15th April 2005).

mangrove forests continue to be overexploited through logging and turning them into saltpans and fish pans[43] despite their important ecological role.

The destruction of mangroves has far-reaching consequences. Environmentally, mangroves act as fish spawning grounds. They also reduce soil erosion, as well as reduce wave action. Apart from these, mangroves act as habitats for birds, crabs, crocodiles among other fauna. Economically, mangroves are used for construction, firewood, as dye and for fish farming. Sedimentation arising from the erosion caused by clearing of mangroves' sites also kills coral colonies, prevents settlement and affects sexual reproduction.[44] The degradation of coral reefs and mangrove forests leads to reduced fishery productivity, coastal erosion, reduced income from tourism and a loss of employment for workers in tourism, fishing and wood industries. It is argued that if one cuts a mangrove, one loses five times in terms of fish.

Tourism has been growing steadily both in terms of numbers and generated revenue since independence and continues to be one of the most important economic sectors in the country[45]. In 2003 the tourism sector recorded a marginal improvement despite the adverse travel advisory issued by the United Kingdom and the United States of America. Tourism earnings increased from 21,734 million Kshs in 2002 to 25,768 million Kshs in 2003. International visitor arrivals increased by 14.5% from 1,001,300 in 2002 to 1,146,100 in 2003.[46] The coastal region is the main tourist destination accounting for 60% of all the occupancy in hotels.

In Mombasa alone, tourism accounts for 45% of all the economic activities and employs 40,000 workers. Tourism has led to extensive privatisation of land along the coastline and this in turn has led to beach access problems. Tourists trample on corals and also collect marine trophies leading to the destruction of coral reefs and hence loss of the rich reef biodiversity, which attracts tourists to the coast. Some hotel constructions interfere with the delicate marine ecosystems (lagoons, fragile sandy

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43 Ibid.

44 M. Samoilys, '*Abundance and species richness of coral reef fish on the Kenyan coast: The effects of protective management and fishing*', **6**(2) *Proc. In. Coral Reef Symp*. (1988b), 261-266

45 UNEP, 'Eastern Africa atlas'.

46 Economic survey, 2005.

beaches and coral reefs) due to a lack of consideration of the environmental impacts this has (e.g. loss of habitats and aesthetic value of the tourism facilities) before construction. Sea walls pose a major threat to the coastal and marine ecosystems by impairing oceanic physical processes and coastal erosions.

Agricultural practices along the coast of Kenya are predominantly small-scale with the exception of a few coconut and sisal plantations. Important food crops include cassava, sweet potatoes, maize, coconut, cowpeas and rice. Bananas, mangoes and pineapples are grown for domestic consumption and export while cashew nuts and sisal are grown for export. Other crops grown include cotton, rice and sugarcane. Nearly 50% of the arable land is under tree crops, which consist mostly of cashew nuts, coconuts, citrus and mangoes.[47]

Pollution from agricultural chemicals e.g. through pesticide and fertilizer runoff is a major concern for fisheries. Chemicals in pesticide runoff become more concentrated and toxic as they work their way up the food chain. They accumulate in the bodies of fish and other higher-level organisms. Agricultural pollution is also considered a threat to coastal fisheries as more than 90% of all chemicals, refuse, and other material entering the coastal waters remain in the sediments, wetlands, fringing reefs, and other coastal ecosystems.[48] Municipal pollution is also known to increase eutrophication, leading to an increase in nitrate concentrations.[49] Eutrophication has also been shown to interfere with the sensory ability of visually guided aquatic organisms in Lake Victoria, raising concerns on its impact on reproduction.[50]

Maritime commercial activities, including transportation and the handling of goods and passengers, represent 15% of the economy of the coast. While the main centres of maritime commerce are at the port of Mombasa and Lamu, secondary commercial

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47 UNEP, 'Eastern Africa atlas'.

48 T.M. Munyao, 'Environmental effects of coastal sedimentation. A case study of Shirazi-Funzi Lagoon', in J. Hoorweg (ed) *Dunes, groundwater, mangroves and birdlife in coastal Kenya,* (Nairobi: Acts Press, 1998).

49 J.J. Cole et al., 'Nitrogen loading of rivers as a human-driven process', in M. McDonnell/S. Pickett (eds.), *Humans as components of ecosystems,* (New York: Springer-Verlag, 1993), pp. 141-157.

50 O. Seehausen et al., '*Cichlid fish diversity threatened by eutrophication that curbs sexual selection*', **277** *Science* (1997), 1808-1810.

activities are shared by the ports of Funzi, Kilifi, Kiunga, Malindi Mtwapa, Kilindini, Port Reitz Harbours, the 'Old Port', Port Tudor and the water fronts of Mombasa Island, Shimoni and Vanga. The Port of Mombasa serves the commercial, agricultural and industrial interlude of Kenya and the great lake region of Eastern Africa. Exploration activities for the development of offshore oil fields are in progress in the northern coastal zone. These activities are supervised by the National Oil Corporation (NOC).

Various types of minerals are found along the Kenyan coast. Some of the mineral occurrences are of economic significance and a few are currently being exploited. At Mrima hill in Kwale, mineralization comprises of an association of pyrochlore, apatite, galena, iron ore and manganese. Of these, pyrochlore appears to have the highest potential.

The Vitengeni deposits in Kilifi District are being exploited for Barytes, with Galena as a by-product. However, at Kinangoni, Galena is the dominant mineral with Barytes and Silver forming the subsidiary minerals. Gypsum is mined from sedimentary deposits at Roka in Kilifi District. Other Gypsum deposits of possible economic significance have been discovered in Tana River District (Assa, Hirimma, Bangale areas). At Jaribuni in Kilifi District, iron ore is being mined to supply the cement factories at Bamburi and Athi River cement in Kaloleni.

Sand for building is mined in many localities along the coastal zone. Among the most important sites are Tiwi in Kwale District and Mazeras, which supply Mombasa and Ngomeni for the Malindi area. Silica sands for glass manufacture are obtained from deposits in Arabuko-Sokoke (Kilifi) and Msambweni (Kwale). Clay is mined for brick works in the Port Reitz area of Mombasa.

Mining has the potential of being one of the most important activities along the Kenyan coast with the advent of the Titanium Mining Project, which is expected to push the contribution of the mining sector GDP from 1% to 3%. Tiomin is planning to mine heavy minerals sands in Kwale starting from 2007. Other titanium mining companies have taken interest in exploring the heavy mineral deposits at Malindi and Kilifi while plans for port construction at Dongo Kundu are underway. There is

already increasing interest in the other mineral occurrences like lead, copper and zinc around Mkangombe in Kwale District.[51]

Salt is recovered from seawater at Ngomeni northwards to the Lamu area where extensive salt works have been established at the Gongoni-Fundisa area and Kurawa. The total area dedicated to salt production is over 5,000 hectares that yield an average of over 170,000 tonnes of salt annually.

Other minerals mined include limestone-weathered shale, iron ore, pozzolana and gypsum. Coal and heavy fuel oil are imported. Typical activities and their socio-economic relevance to fisheries during the different mining phases (exploration, mining/refining and mine closure) include impact on fisheries in terms of garbage, fluid and sewage disposal, water pollution, risk of oil spills, socio-cultural and economic changes arising from the micro-economic establishment. In addition, chemical pollutants including halogenated hydrocarbons, heavy metals and petroleum products[52] can cause tumours and diseases in coastal fish thus negatively impacting on the fishery. Plastic and other debris that may arise from these activities are known to kill a variety of marine animals including sea turtles and dugongs.[53]

In view of multiple demands on the coastal zone, the most important issues are declining fishery production, habitat destruction, resource use conflicts and a decline in biodiversity.[54] These conditions have led to resource use conflicts and divergent perceptions relating to marine fisheries.

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51 Wachenje, pers. comms.

52 NRC, 'Understanding Marine Biodiversity: a research agenda for the nation', Washington D.C. National Academy of Science, 1995).

53 G.M Wamukoya et al., 'Sea turtle recovery action plan for Kenya-STRAP,(KCCT Technical Report TR-1, 1997); WWF Eastern Africa Marine Ecoregion, 'Towards a Western Indian Ocean Dugong conservation strategy: The status of Dugongs in the Western Indian Ocean region and priority conservation actions', (Dar es Salaam, Tanzania, WWF, 2004).

54 E. Kimani/G.K. Mwatha, 'Research and management of fish and marine resources', in A.W. Wamukota (ed.), *Proceedings of the Exposure & Exchange Workshop on Marine Life Management,* (Mombasa, Plaza Beach Hotel, 10th – 15th April 2005).

3. Perceptions/non-perception of basic fisheries issues

The decline in the marine fishery is generally attributed to overfishing[55] and oceanic climatic variations.[56] While growth overfishing reduces the size and yield of target species[57], recruitment overfishing reduces the recruitment success of populations.[58] Ecosystem overfishing alters species interactions and habitat quality.[59]

An increase in human population and the use of destructive fishing gear are seen to be responsible for the decline in fish landings.[60] The increased fisher population has seen traditionally non-fisher tribes joining the fishery and witnessed an upsurge of destructive fishing practices. The fishery has further attracted migrant fishermen whom local fishermen accuse of using small meshed beach seine nets and sometimes dynamite.[61] Local fishermen estimate a 90% drop in trap catch since the arrival of beach seines.[62] In areas where the gear was excluded, catches were observed to be higher.[63] However, according to a study carried out in Mombasa, Malindi and Diani in regard to gear management[64], traditional leaders were not viewed as discouraging the use of small meshed size nets.

Reef area degradation brought about by overuse is evident through the lower abundance of finfish and coral and the increased numbers of sea urchins, increased turf algae cover, and lowered coral cover. Management initiatives suggested include

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55 G.A. Rose et al., '*Distribution shifts and overfishing the northern cod (Gadus morhua): A view from the Ocean*', **57** *Can.J.Fish. Aquat. Sci.* (2000), 644-664.

56 T. Lauck et al., '*Implementing the precautionary principle in fisheries management through marine reserves*' **8** *Ecol. Appl.* (1998), 72-78; K.F. Drinkwater and D.G. Mountain, 'Climate and oceanography', in J. Boreman et al. (eds.), '*Northwest Atlantic groundfish: perspectives on a fishery collapse*', *Amer.Fish Soc* (2002), pp. 3-25.

57 J.A Koslow et al., '*Effects if fishing on reef fish communities at Pedro Bank and Port Royal Cays, Jamaica*', **43** M*ar. Ecol.Prog.Ser.* (1988), 201-212.

58 S. Jennings/J.M. Lock, 'Population and ecosystem effects of fishing', in N.V.C. Polunin/C.M. Roberts (eds.), *Reef Fisheries* (London: Chapman and Hall, 1996), pp. 193-218.

59 McClanahan, 'Fish predators and scavengers'.

60 T.R. McClanahan et al., '*The effects of traditional fisheries management on fisheries yields and the coral-reef ecosystems of southern Kenya*' 24(2) *Env. Conservation* (1997), 105-120.

61 KESCOM, *Enhancing community participation in the conservation and management of sea turtles in Kenya*, (UNDP GEF/SGP Project Report, 2005), pp. 81.

62 McClanahan/Kaunda-Arara, 'Fishery recovery'.

63 McClanahan/Mangi, 'Gear-based Management'.

64 T.R. McClanahan et al., '*Perceptions of resource users and managers towards fisheries management options in Kenyan coral reefs*', **12** *Fisheries Management and Ecology* (2005), 105-112.

the following: a) the general encouragement of responsible fishing practices and co-management structures, b) the curtailment of destructive fishing methods including the use of poisons, beach seines, and spear guns, c) further development of Marine Protected Areas (MPAs) with both park (non-fishing) and reserve (fishing restrictions) sectors and d) a resolution of conflicts arising from the migration of foreign nationals from Pemba Island and the northern Tanzanian coast into Kenya's south coast fishing areas where the foreign nationals are accused of using destructive fishing gear.

Although according to fishermen, catch per unit effort has declined significantly over the last 30 years[65], there is a low degree of awareness that land-based activities, political and economic conditions could affect the condition of the resource. Instead, some fishermen associate a reduction in marine fish to the fish moving towards other locations, hiding or altering their behaviour apart from attributing it to dogma.

According to the local community, the introduction of the salt recovery industries at Malindi were seen not only to have taken farming land from the locals and rendered the few remaining farms unproductive due to salt water intrusion, but contributed to the decline in fish catches in adjacent areas due to changes in the marine environment arising from increased salinity.[66] Tourism development is also cited as contributing to coral deaths since its activities sometimes involve stepping on live corals, thereby interfering with reef fishery habitat. Inshore prawn trawling in Ungwana bay is also perceived to have depleted local fisheries through habitat destruction, leading to a decline in fish landings.[67]

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65 Malleret-King, 'A food security approach'.

66 Omar Mshamu, pers.comms.

67 B. Fulanda/H. Moton'gwa, "Bottom Shrimp Trawling in Malindi: A Preliminary Survey of its Impacts on the Artisanal Fishery". Paper Presented at the WIOMSA Symposium, Dar es Salaam, 22nd – 25th Oct. 2001.

II. The legal regimes governing fisheries

1. Global and regional international legal instruments affecting Kenya including participation in Regional Fisheries Bodies

Global legal instruments

Agreements	Date of signature	Date of ratification/ accession	Date of entry into force
United Nations Convention on the Law of the Sea (Montego Bay 1982)	10 December 1982	2 March 1989	16 November 1994
Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (New York 1995)	4 December 1995	13 July 2004	
FAO Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas (Rome 1993)	29 November 1993		
Ramsar Convention on Wetlands (Iran 1971)	2 February 1971	05 October 1990	21 December 1975
Rome Declaration on the Implementation of the (FAO) Code of Conduct for Responsible Fisheries (Rome 1999)	10/11 March 1999		
Convention on Biological Diversity (Rio de Janeiro 1992)	11 June 1992	26 July 1994	24 October 1994
United Nations Framework Convention on Climate Change (UNFCCC) (1992)	12 June 1992		28 November 1994
Agreement for the Establishment of the Indian Ocean Tuna Commission (Rome 1993)	25 November 1993		27 March 1996

Convention on the High Seas (Geneva 1958)	29 April 1958	20 June 1969	30 September 1962
Convention on the Territorial Sea and the Contiguous Zone (Geneva 1958)	29 April 1958	20 June 1969	10 September 1964
Convention on Fishing and Conservation of the Living Resources of the High Seas (Geneva 1958)	29 April 1958	20 June 1969	20 March 1966
Convention on the Continental Shelf (Geneva 1958)	29 April 1958	20 June 1969	10 June 1964

Regional international legal instruments/Regional fisheries bodies

Organisation/Body	Date of signature	Date of ratification/ accession	Date of entry into force
Indian Ocean Tuna Commission (IOTC) (Rome 1993) – drawn up (at Rome) under Art XV of the FAO Constitution and approved by the FAO Conference at its 27th Session	25 November 1993	9 January 2004	27 March 1996
South West Indian Ocean Fish Commission (SWIOFC) – established by the FAO Council at its 127th Session under Article VI(1) of the FAO Constitution	November 2004		
Southern Indian Ocean Fisheries Agreement (SIOFA) (Rome 2006)	12 July 2006		
Western Indian Ocean Marine Science Association (WIOMSA)			
Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region of 1985 and	21 June 1985		

its protocols (NAIROBI CONVENTION)			

2. Overview of domestic legislation and guiding legal principles

Legislations

The main legislations guiding fisheries activities are the Fisheries Act Cap 378 (hereinafter Fisheries Act or FA) and the Wildlife (Conservation and Management) Act Cap 376 (hereinafter Wildlife Act or WA).

Fisheries Act

The Fisheries Act is implemented by the Ministry of Livestock and Fisheries in conjunction with other State organisations, such as the Fisheries Department. It aims at controlling fishing activities and subsequent processing.

The FA is set out in six parts and 26 sections of the Fisheries Act 1989 (Act No. 5 of 1989; revised 1991). The Act applies to both marine and inland fisheries. In addition to the Act, there are subsidiary legislations, the Fisheries (General) Regulations (Legal Notice 34) of 1991 and the Fisheries (Foreign Fishing Craft) Regulations (Legal Notice 35) of 1991, which consist of a concretisation of the provisions of the Act. Like the Act, they are structured in parts and sections known as regulations. Unless otherwise indicated, in this paper sect. will refer to the provisions of the Fisheries Act, FGR to the provisions of the Fisheries General Regulations and FFFCR to the provisions of the Fisheries (Foreign Fishing Craft) Regulations.

The Act establishes bases for the following:

a) Registration of fishing vessels (obligation of registration of fishing vessels and definitions of governing conditions).
b) Licensing provisions:
    i) Obligation to possess a valid licence to fish in Kenya fishery waters.
    ii) Local fishing vessel requirements.
    iii) Foreign fishing vessel requirements.
    iv) Other licenses (requirements for any other fisheries activity including sport fishing).
c) Offences and enforcement (defines specific offences and penalties):

i) Prohibited methods of fishing.
ii) Trade and commerce of fish illegally caught.
iii) Obstruction of officers.
iv) Powers of officers.
v) Procedure of forfeiture.

d) General provisions (miscellaneous):
i) Prohibition of fishing of marine mammals in Kenya waters.
ii) Specification of Minister's powers to make regulations (e.g. to organise and regulate marketing and distribution of fish; establish credit schemes, etc.).

Fisheries (General) Regulations

The Fisheries (General) Regulations (hereinafter FGR) address more issues pertinent to local fishing vessels, fishermen, fish traders and processors of fish and fish products whereas The Fisheries (Foreign Fishing Craft) Regulations (hereinafter FFFCR or EEZ Regulations) purely address questions concerning foreign vessels.

The FGR are divided into twelve parts containing sixty-nine regulations. These provisions deal with:

a) Registration of local fishing vessels:
i) Registration of vessels.
ii) Identification of vessels.
iii) Transfer of ownership.
iv) Condition of vessels.

b) Licensing of fishermen:
i) General fisherman's licence.
ii) Licences for particular fish species and activities.

c) Administration of licences, permits and certificates of registration:
i) Application for licences.
ii) Power of licensing officers to issue or refuse licences.
iii) Power of Director to confirm, vary or reverse decisions of licensing officers.
iv) Power of Director to attach conditions.
v) Power of Director to modify licence, permit or certificate of registration.

vi) Power of Director to suspend or cancel licence or permit.

vii) Validity of licence.

viii) Prohibitions on transfer of licence or permit.

ix) Replacement of lost licence, permit or certificate of registration.

x) Effect of conviction.

d) Manner of publication of notices in the gazette.

e) General management measures:

i) Fishing in inland waters.

ii) Landing of fish.

iii) Prohibited fishing methods and gear.

iv) Buoying of gear.

v) Protection of particular fish species, marine mammals and turtles.

vi) Protection of breeding areas.

vii) Submission of data.

f) Regulation of trout fishing and trout fishing activities.

g) Importation of life fish.

h) Restriction on purchase of fish.

i) Prevention of pollution and protection and conservation of fishery waters:

i) Pollution prevention zone.

ii) Pollution and abandoned gear.

iii) Movement of boat or gear to other waters.

iv) Fish stocking.

j) Private marks for fishing gear:

i) Assignment of private mark.

ii) Transfer of private mark.

iii) Prohibition relating to private marks.

iv) Reporting of loss or finding of marked gear.

k) Enforcement:

i) Production of licence on demand.

ii) Obstruction of enforcement officers.

iii) Presumptions of ownership.

In the first to fourth schedule, the FGR also contain samples of general (fishing) application forms, lists of fees for registration and specific licences and permits, lists of designated landing stations, diagram of fish measurements, etc.

Fisheries (Foreign Fishing Craft) Regulations

The FFFCR are made up of five parts possessing forty-seven regulations. The provisions deal with the following:

a) Licensing of foreign fishing vessel:
    i) Strict requirement of fishing licence.
    ii) Communication between foreign fishing vessel (FFV) and Minister or Director.
    iii) Application for licence.
    iv) Issuance of licence.
    v) Fishing plan.
    vi) Local representative.
    vii) Licence fees and other charges.
    viii) Conditions of licence.
    ix) Modification of licence.
    x) Replacement of licence.
    xi) Prohibition on transfer of licence.
    xii) Requirement to keep licence in the vessel.
    xiii) Requirement to produce licence on demand.
    xiv) Suspension or revocation of licence.
    xv) Appeal.
b) Control of FFV in Kenya fishery waters:
    i) Prohibition to fish in territorial waters.
    ii) Stowage of fishing gear in no-fishing zones.
    iii) Transhipment of catch.
    iv) Notice of intention to enter EEZ.
    v) Port inspection.
    vi) Inspection prior to departure.
    vii) Exemption from port inspection.
    viii) Port call.

ix) Flags.
x) Markings.
xi) Navigational lights and shapes.
xii) Communication.
xiii) Compliance with directions.
xiv) Records.
xv) Reporting.
xvi) Notification of completion of quota.
xvii) Avoidance of set gear.
xviii) Pollution and abandoned fishing gear.
xix) Navigational customs.

c) Fisheries scientific research:
   i) Requirement to obtain consent and permit.
   ii) Right to withhold consent.
   iii) Application.
   iv) Duty to comply with certain conditions.
   v) Grant of permit.
   vi) Suspension and cessation of research.

d) Miscellaneous:
   i) Powers of authorised officers.
   ii) Observers.
   iii) Security.
   iv) Penalties.
   v) Presumption re fish found on board in the event of an offence.

The FFFCR also contain samples of application forms, foreign fishing craft licences, a list of fees and calculations for royalties.

Wildlife Act

The Wildlife Act of 1976 (amended 1989) is implemented by the Ministry of Environment and Natural Resources (MENR) and other relevant government agencies such as the Kenya Wildlife Service (KWS). It aims at preservation and control of wild fauna and flora by ensuring that they flourish naturally in their habitats. However, most of its provisions are more concrete on animal wildlife issues

and dry-land parks and reserves thus sparingly making mention of fisheries. Therefore, the KWS is in the process of developing marine-park and reserve-specific regulations.[68]

The WA is structured in nine parts with sixty-eight sections. Right on the onset, it introduces its prime objective, which is to ensure that wildlife is managed and conserved in such a manner as to yield benefits for the Nation and individual areas (in particular) without prejudicing proper management and conservation. It possesses provisions on the following:

a) Administrative structures:
    i) Wildlife Conservation and Management Service (KWS or Service).
    ii) Director.
    iii) Officers.
    iv) Game wardens.
    v) Power of Director to appoint (honorary) game wardens.
    vi) Power of Director to delegate his functions.
b) National parks, reserves and sanctuaries:
    i) Power of Minister to declare any area a national park, reserve or sanctuary.
    ii) Power of Minister to declare that a national park, reserve or sanctuary shall cease to be such.
    iii) Power of Minister to assign or amend names, define or alter boundaries, amalgamate, divide or transfer parks.
    iv) Management of parks.
    v) Restrictions in parks.
    vi) Protection area.
    vii) Power of Minister to make national park regulations.
c) Control of hunting:
    i) Powers of honorary game wardens.
    ii) Prohibitions.
    iii) Licences.

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68 T.R. McClanahan et al., '*Management of the Kenyan coast*', 48 *Ocean & Coastal Management* (2005), 901-931.

iv) Registers.

v) Unlawful methods of hunting.

vi) Closed seasons.

d) Trophies and live animals.

e) Enforcement:

i) Powers of officers.

ii) Arrest and seizure.

iii) Effect of conviction and powers of court.

f) Wildlife fund.

g) General provisions:

i) Unlawful possession of the property of the Service.

ii) Posing as an officer of Service.

h) Miscellaneous:

i) Lost licences.

ii) Power of Minister to make regulations.

Regulation concerning parks and reserves was originally described in the Kenya government sessional paper no. 3 of 1975 and later in the WA. Accordingly, protected areas are divided into parks and reserves. Previous subsidiary legislations to the Act only referred to Kisite Marine National Park[69], and the Mpunguti and Kiunga Marine National Reserves[70] under parks and reserves, respectively. The new Wildlife (Conservation and Management) (National Parks) (Amendment) Regulations 2005 which entered into force on July 1st, 2006[71] divided the parks into five groups categorised under 'A–D' and 'Special'. All marine parks and reserves are grouped under category 'C' without naming them.

Within national parks, restriction is imposed on extractive activities, but allows visitation, education and research activities. In the national reserves, controlled extraction of resources in addition to visitation, education and research activities are allowed.

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69 Legal Notice 92/1978, 13/1983, 18/1983, 100/1983, 13/1984.

70 Legal Notice 75/1976, 91/1978, 186/1979, 187/1979, 261/1979, 290/1979, 291/1979, 300/1979, 13/1983, 101/1983.

71 See The Wildlife (Conservation and Management) (Amendment) Regulations, 2006, http://www.kws.org/images/new-tariffs-2006.pdf.

Apart from the above legislations, the Forest Act and the Environmental Management and Coordination Act (EMCA) play a vital role in marine fisheries.

Forest Act

The Forest Act was first enacted in 1962 (Cap 385) and was subsequently revised in 1982 and 1992. It was implemented by the Forest Department of the MENR and addressed preservation, protection management, enforcement and utilization of forest resources on forest reserves, which must be reserved through a gazette notice as forestland. According to the Act, 'a forest area means an area of land declared under section 4 to be a forest area'. It covered, among other things:

a) The power of the Minister to gazette, alter boundaries, and de-gazette forest reserves (sect. 4).
b) The declaration of nature reserves (an area deemed to require extra protection for the purpose of preserving its natural amenities and wherein the exploitation of forest products is prohibited, except with the permission of the Director of Forestry in consultation with the chief game warden) within forest reserves, and regulation of activities within nature reserves (sect. 5).
c) Licenses for activities within forest reserves (sect. 7).
d) The prohibition of activities in forest reserves (sect. 8).
e) The enforcement of provisions of the Act, penalties and powers (sect. 9-14).
f) The power of the Minister to make rules with respect to sale and disposal of forest products, use and occupation of land, licensing and entry into forests (sect. 15).
g) Miscellaneous:
    i) Community utilisation of forests for fuel wood, medicinal plants etc.
    ii) Power of local forester to license community utilisation.

The Forest Act is important to fisheries as it regulates all activities pertaining to forests, including mangrove forests[72], which act as breeding ('nurseries') and feeding

[72] Mangrove forests are the only woody halophytes (plants adapted to living in a saline environment or growing naturally in very salty soil) living at the confluence of land and sea.

areas for fish[73] and other invertebrates[74], enrich coastal waters[75], stabilise the shoreline[76] and help in trapping silt and wastes from upland runoff.[77] The above Act lacked certain qualities, which created an open way to create a negative impact on fisheries. Among the lacking qualities:

1. A lack of clear definition of 'forest', which leaves room for speculation as to whether non-closed canopy forests such as mangroves are forests per se.
2. The de-gazettement power it places on the Minister wherewith the Minister could use his cessation mandate for example to allow excision of forests for other purposes.
3. Limited involvement of communities in the management of forests.

As a result of these and other shortcomings, a draft bill was tabled in parliament, which aimed at, inter alia, broadening the definition of 'forest', limiting the power of the Minister and ensuring closer involvement of the local communities in the management of forests. The bill, which was initially rejected, was finally passed in July 2005, giving way to a new Act, the Forest Act 2005.

The Forest Act 2005 gives a broad definition of 'forest', which embraces all types of woody vegetation[78] and specifically categorises mangrove forests under indigenous

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73 N. Marshall, '*Mangrove conservation in relation to overall environmental considerations*', 285 *Hydrobiologia* Nr 1-3 (1994), 303-309; M.W. Beck et al., 'The role of nearshore ecosystems as fish and shellfish nurseries,' http://www.epa.gov/watertrain/issue11abstr.html; D.M. Alongi, '*Present state and future of the world's mangrove forests*', 29 *Environmental Conservation* (2002), 331-349; cf. A. Sasekumar et al., '*Mangroves as a habitat for fish and prawns*', 247 *Hydrobiologia* Nr 1-3 (1992), 195-207: Mangrove inlets and creeks in Selangor, Malaysia are the habitat for 119 species of fish and 9 species of prawns. The majority of fish and all prawns sampled in the inlets were juveniles.

74 Beck et al., ibid.

75 Marshall, ibid; Beck et al., ibid.

76 Ibid.

77 Marshall, 'Mangrove conservation'.

78 It defines a forest as 'any land containing a vegetation association dominated by trees of any size, exploitable or not, capable of producing wood or other products, potentially capable of ameliorating climate, exercising an influence on the soil, water regime, and providing habitat for wildlife'. B. Swallow et al., 'Catchment property rights and the case of Kenya's Nyando basin', http://www.iwmi.cgiar.org/assessment/FILES/pdf/publications/WorkshopPapers/Catchme

forests (Part I, Preliminary). It also states that '[A]ll indigenous forests (…) shall be managed on a sustainable basis for purposes of', among others, '(…) fisheries in mangrove forests' (sect. 40 (1) h)). The Act slashes down the power of the Minister to arbitrary allow removal of forests.[79] Now the Minister must give a notice of intention to de-gazette forestland after which Kenyans will be consulted concerning the same.[80] In addition, an environmental impact assessment (EIA) will have to be carried out by an independent organisation.[81] Finally, the parliament will still have to approve any decision of excision.[82]

The Environmental Management and Coordination Act

The state of the environment is very vital for the existence of marine life and its ability to flourish. To ensure a well-managed environment, the State must be in possession of environmental laws that are capable of counteracting acts, which lead to degradation such as pollution and overexploitation. Kenya lacked such laws prior to the EMCA of 1999, which entered into force in 2000.[83] The Act is implemented by the MENR through government agencies with the principal one being National Environment Management Authority (NEMA). [NEMA is a government parastatal and hosts the focal point office of the Ministry of Environment and Natural Resources.[84] It is in charge of environmental policy implementation in Kenya.[85]] The EMCA is divided into fourteen parts containing one hundred and forty eight sections.

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ntPropertyRights.pdf; V. Matiru, 'Forest cover and forest reserves in Kenya: Policy and practice', http://www.iucn.org/places/earo/pubs/forest/forestcover.pdf.

79 Swallow et al., ibid; Matiru, ibid; W. Ojanji, 'What you might not know about forest act', *The Standard Online* (2 December 2005), http://www.eastandard.net/archives/cl/hm_news/news.php?articleid=33031, accessed on 17 July 2006.

80 Ojanji, ibid.

81 Ibid.

82 Ibid.

83 For details see E.C. Kamau, '*Environmental law and self-management by industries in Kenya*', 17 *Journal of Environmental Law* Nr 2 (2005), 229-244, 229-231.

84 See East African Region, http://www.unep.org/regionalseas/Publications/parts_data/Convention.doc.

85 Ibid.

The Act synchronised and widened the spectrum of environmental concerns, which were initially haphazardly scattered in different legislations.[86] It made way for the integration and the implementation of new ideas in line with international conventions and treaties to which Kenya is party (sect. 124) such as the CBD[87], and for the establishment of environmental quality criteria and standards[88], e.g. for water for fisheries (sect. 71 (b) (v)). It also introduced the EIA (sect. 58-67) prior to commencement of any project (sect. 58 (1)) including fish processing (schedule 2, 9 (o)), as well as environmental audit and monitoring (sect. 68-69).

Other provisions of importance to fisheries deal with:

a) The conservation of biological diversity. Sect. 50 gives NEMA authority, in consultation with relevant lead agencies, to, inter alia:
    i) Identify, prepare and maintain an inventory of biological diversity of Kenya;
    ii) Determine which components of biological diversity are endangered, rare or threatened with extinction;
    iii) Identify potential threats to biological diversity and devise measures to remove or arrest their effects;
    iv) Undertake measures so as to integrate conservation and sustainable utilisation ethic in government or private activities affecting biological diversity;
    v) Protect indigenous property rights of local communities in respect of biological diversity.
b) The conservation of biological resources in situ (sect. 51). NEMA has the mandate to issue guidelines, in consultation with relevant lead agencies, for:
    i) Land use methods that are compatible with conservation of biological diversity;
    ii) The selection and management of protected areas so as to promote the conservation of the various terrestrial and aquatic ecosystems under the jurisdiction of Kenya;
    iii) The selection and management of buffer zones near protected areas;

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86 Kamau, 'Environmental law and self-management'.

87 E.g. the question of access to genetic resources, EMCA, sect. 53.

88 Kamau, 'Environmental law and self-management', 241.

iv) Special arrangements for the protection of species, ecosystems and habitats threatened with extinction;

v) Prohibiting and controlling the introduction of alien species into natural habitats; and

vi) Integrating traditional knowledge for the conservation of biological diversity with mainstream scientific knowledge.

c) The protection of the coastal zone (sect. 55):

i) The power of the Minister (by notice in the Gazette) to declare an area a protected coastal zone and to issue, in consultation with relevant lead agencies, appropriate regulations to prevent, reduce and control pollution or other form of environmental damage.

ii) The power of the Authority (NEMA), in consultation with relevant lead agencies, to prepare a survey of the coastal zone containing, e.g., an inventory of the state of the coral reefs, mangroves and marshes found within the coastal zone, areas within the coastal zone of special value for research in respect of fisheries, erosion and its impact on the coastal zone, an estimate of the extent, nature, cause and sources of coastal pollution and degradation etc.

iii) The prohibition against and penalty for pollution.

Probably one of the greatest steps the Act makes is to acknowledge the importance of leading international legal principles through statutory recognition of what has in the recent past evolved as generally accepted international principles in the field of environment as a whole.[89] The Act outlines a number of principles of sustainable development[90] – as defined in the Brundland Report of 1987.[91] These are anchored in part II of the EMCA (sect. 3) and include:

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89 Several principles and concepts of environmental law have emerged in the more than two decades since the Stockholm Conference in 1972. Some of these, which first appeared as 'soft law' in such documents as the Stockholm Declaration on the Human Environment, 1972 (U.N. Doc. A/Conf. 48/14/Rev. 1, U.N., New York, 1973), the World Charter for Nature, 1982 (G.A. Res. 37/7, 37 U.N.G.A.O.R. Supp. No. 51, U.N. Doc. A/37/51, U.N., New York, 1982) and the Rio Declaration, 1992 (United Nations, Report of the United Nations Conference on Environment and Development, Rio de Janeiro, 3-4 June 1992, Vol. 1, U.N., New York, 1992) have subsequently been incorporated into treaty law and national legislation of a number of pioneering States.

90 Sect. 3 (5); for further reading see B.D. Ogolla/J.B. Ojwang in International encyclopaedia of environmental laws [Kenya Section], Kluwer Law International, 1999, p. 24 ff.

91 See World Commission on Environment and Development, *Our Common Future* (Oxford University Press, 1987), p. 43. The Brundland Report defines sustainable development as

a) The principle of public participation in the development of policies, plans and processes for the management of the environment[92];

b) The cultural and social principles traditionally applied by any community in Kenya for the management of the environment or natural resources in so far as the same are relevant and are not repugnant to justice and morality or inconsistent with any written law;

c) The principle of international cooperation in the management of environmental resources shared by two or more states;

d) The principles of inter-generational and intra-generational equity[93];

e) The polluter pays principle[94]; and

f) The precautionary principle.

These principles consist of a general or common cornerstone and obligation to all pertinent laws and activities.

3. General fisheries management measures

As already mentioned above, Kenya does not have a separate law on governance of fisheries in the EEZ. The subsidiary regulations to the Fisheries Act known as 'The Fisheries (Foreign Fishing Craft) Regulations', or 'EEZ Regulations', is the only legislation which could be referred to as EEZ-specific. Consequently, most of the measures used to govern the EEZ apply equally to the coastal zone. Therefore, the instruments of promotion and management of fisheries considered in section 3 b) below are to the greatest extent generally applicable to both coastal and exclusive economic zones.

'development that meets the needs of the present without compromising the ability of future generations to meet their needs.' The inspiration for this concept appears to have crystallised after the Stockholm Conference on the environment in the seventies. However, its clear legitimacy and acceptance came with the 1992 Earth Summit in Río when the official document of the summit provided a blueprint for harmonising the imperatives of economic development and those of a healthy environment. Cf. J.G. Nyamu, '*Environmental law and practice – a big step forward*', *The Lawyer*, Nr 14 (October 2000): Agenda 2 stressed the need for national capacity for sustainable development in developing countries by using national environmental legislation and building up institutional frameworks to deal with the management of the environment.

92 See The Kenya National Environment Action Plan: Report, MENR, Nairobi, 1994, p. 137 ff.

93 See Government of Kenya, Sessional Paper No. 10: '*African socialism and its application to planning in Kenya*' (Nairobi: Government Printer, 1965), p. 39.

94 See Government of Kenya, Development Plan 1989-1993 (Nairobi: Government Printer, 1989), para. 8.30.

a) Institutional/organisational structures

Fisheries Department

Director

The Fisheries Act establishes the office of the Director who is the main authority charged with the administration of the provisions of the Act subject to the directions of the Minister (sect. 3 (1)). He is assisted by an assistant Director.

In order to discharge his powers, the Director is mandated to delegate, in writing, powers and functions conferred upon him by the Act to authorized officers at his own discretion (sect. 3 (2)).

The Director is endowed with legislative powers, in line with legislating guidelines of the Act, to make regulations aimed at promoting traditional and industrial fisheries, fish culture and related industries[95] (sect. 4), as well as imposing management measures – with the approval of the Minister (sect. 5).

The Director receives applications for licences of foreign fishing vessels and issues licences (sect. 12 (1)). He may also receive applications for local fishing vessels if no fisheries officer has been designated by him to do so (sect. 9 (1)). It is his responsibility to ensure that a register of all vessels registered under the Fisheries Act is kept (sect. 7 (4)), and that all licensees comply with any requirements that the Director may establish concerning the making of statistical returns and the collection of information (sect. 8 (4)). He may revoke or suspend a licence for a local or foreign fishing vessel at any time if necessary (sect. 10 (2), 13 (2)). With the Minister's approval, the Director may exempt a local vessel, in writing, from paying the whole or part of the registration fee (FGR, 3 (3)). The Director may also compound offences and order the release of any vessel or other thing seized by receiving a sum of money not exceeding the maximum fine specified for the offence, or the value of the vessel or other thing, respectively, if the offender admits in writing to have committed the

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95 To this end the Director shall cooperate with other appropriate agencies and other Government departments.

offence (sect. 20 (1)). Finally, the Director may assign an observer to any foreign fishing craft (FFFCR, 44 (1)).

Fisheries officers

Fisheries officers may be divided into two groups depending on their function: 'white-collar-job' and 'field' fisheries officers.

White-collar-job fisheries officers mainly perform office duties, which include receiving applications for licences for local fishing vessels and issuing licences through designation by the Director and subject to his instructions (sect. 9 (1), (2)). They may require any vessel to be inspected by an authorised officer prior to issuing out of a licence (FGR, 3 (4)). They also receive fees for licences (sect. 9 (2) and allot identification numbers to vessels, as well as ensure that the allotted number is entered in a register (FGR 3 (5)). Field fisheries officers, on the other hand, are mainly involved in the enforcement of the provisions of the Act and regulations made thereunder (sect. 17, 18). They are generally referred to as 'authorised officers' and are comprised of fisheries officers of the FiD, police officers of or above the rank of inspector, officers of the Kenya Navy or other armed force, or persons appointed by the Minister, by notice in the Gazette, for the same purpose (sect. 2).

According to sect. 18, authorized officers are empowered to 1) stop and board any fishing vessel in Kenya fishery waters so as to inspect such vessel, its cargo, supplies, fishing gear and equipment, 2) stop and inspect any vehicle transporting fish, 3) demand and examine licence and other documents required under the Act or regulations made thereunder and take copies thereof, 4) require to be produced and examine any fish, net or any other fishing gear or 5) impound any fish to be taken as samples and issue a receipt in the prescribed form. They also have the power to enter premises which have either been used, or are suspected to have been used for offences, arrest persons believed to have committed offences, and seize any fish, gear, vessel, vehicle etc. used or believed to have been used in commission of an offence.

Authorised officers may exercise any of the powers and functions of the Director if delegated by him in writing (sect. 3 (2)). They may also conduct any prosecution for

any offence under the Act or the regulations made subject to the direction of the Attorney General (sect. 21). In such cases, the authorized officer will have all the powers conferred upon a public prosecutor by the Criminal Procedure Code (sect. 21).

Minister

The Minister gives directions to the Director in discharging his powers (sect. 3(1)), and approval in imposing management measures (sect. 5 (1)). He has general legislative powers to 'make regulations for the better carrying into effect of the provisions of this Act' (Sect. 23 (1)) and may change or abrogate the decisions or actions of the Director at the appeal of an aggrieved party (sect. 6 (2)).

b) Instruments promoting fisheries

aa) Structural policies

In order to facilitate policies promoting fisheries, the Fisheries Act Cap 378 makes a provision in Sect. 24 allowing the Minister to prepare schemes, with the Treasury's approval, meant to modernize fishing methods. These schemes aim at providing fishers (and fish farmers) with financial assistance so that they can achieve the following:

a) Acquire or modernize fishing vessels;
b) Acquire equipment e.g. gear, nets etc.;
c) Develop fish farms; or
d) Purchase inputs.

This law was made in the 1970s and was intended to help fishers benefit from loans schemes without them necessarily having any guarantees for repayment prior to receiving loans: it was based on good faith.[96] Unfortunately, administration of the scheme was hard and chaotic with some fishers defecting and others dying without leaving any security systems of follow-up, etc.[97] As a result, the Government

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96 Interviewee, FiD.

97 Ibid.

suspended it and restructured its policies.[98] Though defunct, this provision was nevertheless neither repealed nor revised and remains in books today as it was before the Government suspended the scheme (sect. 24).

Currently, the only subsidy available to fishermen is the importation of fishing gear duty free. There are no development banks or micro-finance schemes specifically accessible to fishers. Increasingly, fishers have set up groups, associations or committees that are taking over the role of fisher cooperative societies. A total of 10 such groups are in existence.

Under restructured policies, fishers and fishers' groups, associations or committees (hereinafter organisation(s)) have to hold direct negotiations with financial institutions.[99] One of such institutions is the Agricultural Finance Corporation (AFC).[100] The fisher or fishers' organisation, subject to prior consultation with the financial institution, prepares a proposal and presents it to the financial institution, which looks at it and decides whether it qualifies for a loan.[101] Unlike the initial government scheme, however, the fisher or fishers' organisation is expected to show what guarantee or security assurance exists, preferably in the form of property, before loan is granted.[102] If the two conditions are satisfied, the loan is granted.[103]

In 2001, the Kwale District Development Plan identified the need for fisheries development initiatives such as the provision of boats suitable for use on the outer reef, development of an efficient marketing system, improved access to development loans to enable fishermen to purchase suitable gear and boats, maintenance workshops for boat repairs, hygienic landing depots with cold storage facilities and the construction of slipways to the fish landing site. This was done under the belief that economic constraints have contributed to pressures on the fishery. This, in turn, affected gear choice and forced fishermen into the lagoons and near shore where

98 Ibid.

99 Ibid.

100 Ibid.

101 Ibid.

102 Ibid.

103 Ibid.

resources are already overexploited, as fishers are unable to invest in more seaworthy vessels due to inaccessibility of credit.

The limitation to offer fishermen appropriate subsidies, the subsequent effect on gear choice and the combined implications on resource exploitation led to a rethink of the fisheries management regime through the incorporation of traditional management systems into a formal management regime (see below, BMUs).

bb) Market organisation

The control of trade and price regulation was introduced in Kenya by the colonial government (1901 – 1962).[104] The newly formed government adopted this system of administrative organisation of the market after independence.[105] In 1980, Kenya undertook reforms (Structural Adjustment Programmes (SAPs)) under the aegis of the International Monetary Fund (IMF) and the World Bank, which gradually brought about, among others, liberalisation of trade, interest rates and exchange rates. In addition, there was the privatisation of public sector enterprises, removal of price controls and government subsidies.[106] Today, fishing is a free enterprise: the Government does not, for example, apply administrative pricing any more.[107] Hence, prices regulate themselves depending on the economy[108], market, supply, and demand.[109] Nonetheless, since many fishers' cooperatives collapsed even before liberalisation, fishers carry out negotiations for prices independently ('One to One').[110] However, the value addition based on the quality of the fisher's product is

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104 Cf. C. Bokea/M. Ikiara, 'The microeconomy of the export fishing industry in Lake Victoria', IUCN, http://66.249.93.104/search?q=cache:Kt8ibcrEMaYJ:www.uicn.org/places/earo/pubs/wetlands/MACROECO.PDF+Bokea+and+Ikiara&hl=de&gl=de&ct=clnk&cd=21.

105 Ibid.

106 ILO, Kenya: Meeting the employment challenges of the 21st century, Eastern African Multidisciplinary Advisory Team (EAMAT), Addis Ababa, November 1999, http://www-ilo-mirror.cornell.edu/public/english/employment/strat/cepr/download/kenya.pdf, accessed on 27.07.2006.

107 Interviewee, FiD.

108 Cf. Bokea/Ikiara, 'The microeconomy of the export fishing industry'.

109 Interviewee, FiD; cf. ibid.

110 Ibid.

another factor, which determines demand and price for that particular fisher and his ability to compete in the market.[111]

As there is no governmental subsidy scheme, the question of compatibility with WTO treaty requirements does not arise.

c) Instruments of Fisheries Management

aa) Access and catch restrictions

As mentioned above, the Fisheries Act Cap 378 gives the Director and Minister, under Sect. 5, 6 and 23, the power to undertake concrete measures for promotion and management of both marine and inland fisheries. However, as this is a general regulation, there are subsidiary legislations thereto which regulate specific areas e.g. prone fish, gear, fishing methods etc. These are the Fisheries (General) Regulations, Legal Notice 34/91, and the Fisheries (Foreign Fishing Craft) Regulations, Legal Notice 35/91.

Licences

General licence

No person is permitted to fish in Kenyan fishery waters unless he either possesses a valid fishing licence or does fishing for his own consumption (sect. 8 (1), FGR 9 (1) (a)).[112] A fisher's licence is obtainable, subject to the Director's approval, through application to him in the required form and on payment of the specified fees (FGR, 9 (2)).[113]

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111 Ibid.

112 This must be done, however, according to the Minister's order published in the Gazette, which defines the quantity of fish deemed to be fish for domestic consumption. According to one fisheries officer, fish for domestic (or own) consumption is estimated at six (6) pieces of fish of a length of approximately forty-two (42) centimetres.

113 A sample of the licence (Form DF/L1) and list of fees are printed in the first and second schedules of FGR, respectively. The licence demands compliance with the provisions of the FA and the regulations made thereunder, and contingency to conditions specified thereunder. The amount of fees for a fisher's licence depends on the use or non-use of craft, the type of craft, i.e. whether mechanised or not, and the length of the craft.

A fisher's licence is just a general authorization to catch fish,[114] but does not allow these activities to be carried out indiscriminately. The licence indicates the species of fish, fishing gear, method of fishing and area for which the licence is valid (sect. 8 (3)). For particular species of fish, a supplementary licence must be applied for.

Trader's licence and movement permit

A trader must not necessarily be a fisher. For purposes of trade, a trader's licence and a fish movement permit (FGR 15, 18)[115] may be granted upon application for fish other than crustacean and *becher-de-mer* (FGR 16, 17), as well as fish products (FGR 15 (1)).[116] The fish that is used for trade must have been landed at a landing station designated under FGR 42 (FGR 15 (5)).[117]

Licence for specific species

As mentioned above, the Fisheries Department has discretion to limit or abolish activities that may negatively affect certain species or types of fish, e.g. prone fish. Hence, the harvesting of such species is subject to a distinct licence for that particular species. The licence defines the terms and conditions under which that given species shall be caught. These species include the following:

a) Aquarium fish (requires an aquariums fisherman's licence);
b) Oyster (requires an oyster collector's licence) – the use of mechanical apparatus to take oyster from any oyster bed is forbidden. Oyster collector's licence specifies the area where the licensee is permitted to

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114 Although FGR 9 (1) (a) raises a question as to whether two licences, for fishing and for the vessel, are cumulatively required before a full authorization to engage in fishery activities is attained, sections 9 (4), 11 (1) and FFFCR 3 clearly suggest that a licensed vessel receives permission to enter into Kenya fishery waters, as well as conduct fishery activities. In addition, FFFCR 6 (2) explicitly waives the registration requirement under sect. 7 for foreign fishing vessels. Local fishing vessels registered under FGR 3, on the other hand, are deemed to have a licence required under sect 9. It's probable that sect. 9 meant to seal any loophole that might exist between fishing for home consumption and commercial fishing without vessels.

115 A fish movement permit allows the trader to freely move fish and fish products from one place to another. A licensed fisher or fish farmer does not require a trader's licence and fish movement permit.

116 This does not apply to fish already prepared as food and sold by catering institutions for eating by their patrons.

117 Regulation 42 lists designated landing stations: they present a good opportunity for different types of control – regulation 42 (2) (a), for example, provides for the weighing of fish by fisheries officers at designated fish landing stations. This could be a strategic moment to control quotas, sizes and species.

collect oysters and may be demarcated on the ground before collection commences.[118] The licence may be cancelled immediately, or amended in whole or in part, if the Director is of the opinion that the licensee's activities are detrimental to proper management of oyster resources in the area specified;

c) Trout fish (requires a trout fishing licence);

d) Crustacea (requires a crustacea dealer's licence) and;

e) *Beche-de-mer* (requires a licence to trade in *beche-de-mer*) – any person wishing to export this type of fish must pay royalties based on the value and quantities exported. The rates are determined and prescribed by the Director.

Generally, a fisher's licence and all other mentioned licences and permits do not allow for movement of live fish from one water catchment area to another (FGR, 25)[119], or the import or export of fish (reg. 26) – including live fish. For these activities separate licences must be applied for, e.g. export of aquarium fish (reg. 23)[120], or specific formalities observed.[121]

Catch restrictions

The Fisheries Act and the subsidiary legislations thereto do not specify how the Total Allowable Catches (TACs) for local fishing vessels are determined. For foreign fishing vessels, the Act implicitly suggests the existence of a form of a TAC and ITQ under sect. 12 (2) (a) and (b) respectively. It says that the Director issues a licence to a foreign fishing vessel only if there are fishery resources surplus (…), which may be harvested. From the surplus, he allocates a specific quantity, assumably an ITQ, that the vessel is permitted to harvest. The EEZ Regulations make reference to this requirement under FFFCR 6 (1) (f), 7 (1) and 7 (2) (b). It seems that sect. 5 (1) (d), FGR 31 (2) (a) and FFFCR 10 (a), which empower the Director to limit catches, landings

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118 If demarcation is done, the licensee bears the costs of demarcation.

119 This prerogative belongs to the fisheries department and is meant to avoid the spreading of diseases as well as destabilising the ecosystem (e.g., the unwarranted introduction of Nile perch in L. Victoria has caused a drastic reduction of traditional species as Nile perch is a predator fish).

120 A licence for export of aquarium fish must be surrendered to the collector of customs at the port of export. Its expiry will depend on which event occurs first: the date of expiry as specified in the licence and the shipment of the consignment.

121 FGR 57 (1) requires that any live fish being imported into Kenya be presented to a fisheries officer at the port of entry for verification of any disease. The inspecting officer shall order any fish contaminated with a disease to be destroyed.

and trading of fish based on the amount (weight and quantities), size, age, sex, species etc. could be interpreted as well to mean a kind of a TAC. Section 6 (1), which empowers the Director to limit the number of persons, vessels, nets, etc. employed in a fishery, suggests a TAE. Logically, if an amount of fish to be harvested (ITQ) is fixed as a licence condition, it presupposes that a (general) TAC or total allowable effort (TAE), which may alternatively be the basis for the calculation of individual quotas, has previously been set for the stock or species as a whole. Some of the above instruments do not explicitly address the activities of either local or foreign vessels and therefore could be used to regulate both. There are currently, however, no records indicating that establishment of TACs takes place in practice before ITQs are issued or TAE is determined. It's possible that ITQs are allocated based on non-statistical knowledge of existing fishery potential, among other possible grounds.

If the above terms are included as conditions of a contract[122], it is unclear under which basis this is done, as the knowledge of the status of fisheries in the EEZ is very limited.[123]

There exists a kind of TAE and ITQ in inland fisheries for trout fishing (FGR 54 (f) and (c) respectively). It empowers the Director to regulate trout fishing more strictly. The Director may establish the maximum number of trout, which may be taken from the water by any person (max. 5/day/licensee) during a specified season. He may also limit the maximum number of persons who may fish for trout in any water during a specified period, etc. FGR 54 (1) (d), which empowers the Director to stipulate the minimum size below which a trout taken from the water shall not be

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122 Regulation 42 (2) indicates that a fisheries officer might require that fish landed at a fish landing station be weighed. Again, weighing seems to be the only control provided for, and it is still for the fisheries officer to decide whether it is necessary. There is no indication in the law that catches are controlled on board the vessel although sect. 18 (1) (a) empowers fisheries officers to board any vessel any time in order to inspect its cargo, supplies, equipment and fishing gear.

123 Cf. Gitonga/Achoki, 'Fiscal reforms'. Also available online at: http://www.fao.org/docrep/007/y5718e/y5718e04.htm or http://www.onefish.org/cds_upload/1084213822011_oneFish_FINAL_REPORT_ENG.doc, both accessed on 14.08.2006. See also http://www.oecd.org/dataoecd/15/42/36309072.pdf, accessed on 14.08.2006; G. Habib, '*National report on fisheries potential in Kenya's EEZ*', Commonwealth Secretariat (London: Marborough House, Pall Mall, 2003).

killed but returned to the water can be interpreted with difficulty under TAE or technical measure.

bb) Technical measures under national law

Generally, the Fisheries Act broadly empowers the Director of fisheries to undertake fishery development measures in cooperation with appropriate agencies and other government departments. Also, with the approval of the Minister, the Director can issue regulations so as to impose fisheries management measures (sect. 4 and 5 respectively). These include, inter alia, providing extension and training services, conducting research and surveys, promoting cooperation among fishermen, promoting arrangements for the orderly marketing of fish, providing infrastructure facilities, stocking waters with fish, as well as supplying fish for stocking. Furthermore, it includes the imposing of closed seasons for designated areas, species of fish or methods of fishing, prohibited fishing areas for all or designated species of fish or methods of fishing. Additionary, it considers the limitations on the methods or gear[124] or mesh sizes of nets and the limitations on the amount, size, age and other characteristics and species or composition of species of fish that may be caught, landed or traded, respectively (also FGR 31-32 (1)).

The Director may issue specific measures for (inland) trout fishing (FGR 54 (1) (a),(b),(e),(g)). He may declare any water or part of it open or closed for trout fishing for all or specific group of people, stipulate the type and size of hook or lure which may be used for trout fishing and control the entry by any person into a fishing camp and activities carried therein.

The law totally prohibits all fishing activities in breeding areas (FGR 50). Consequently, any person who disturbs any spawn or spawning fish in a breeding area is guilty of an offence punishable by fine, imprisonment or both (FGR 50).

Due to extreme and constant mobility of marine mammals and turtles, all marine zones of Kenya are declared by law to be marine mammal and turtle sanctuaries

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[124] According to Section 5 (2) of the Fisheries Act, the Director may, by notice in the Gazette, prohibit the possession of a gear in the area where it has been prohibited.

(FGR 51). All activities that might threaten, harass, disturb their behaviour or breeding habits are prohibited (FGR 51). Any marine mammal or turtle caught or taken unavoidably during fishing must be put back into the water whether alive or dead (FGR 51). It is an obligation for all fishing vessels to have a turtle excluder device (TED) in place (Kenya Gazette notice no. 7565).

The Director has the power to refuse to issue or renew licences, impose a special licence and catch fees, issue preferential licences in fisheries other than the one desired by the applicant, or revoke or suspend licences (sect. 6 (1), 10 (2)). This is meant to limit the number of persons, vessels, nets or areas in a specific fishery so as to avoid over-fishing (sect. 6 (1), 10 (2)). A licensing officer is also empowered under FGR 30 (1) to refuse to issue a licence for any reasons he thinks a licence should not be issued. However, he must give a full account of his decision to the Director, who has the power to uphold, vary or reject the decision of the licensing officer in case of a complain by an aggrieved party. This provision gives licensing officers an opportunity to enforce good practice in fisheries activities although their decisions might not always pass.

This instrument is weakened by two major factors. First, a party aggrieved by the Director's or licensing officer's decision may appeal to the Minister or Director, respectively, whose decision is final (sect. 6 (2), FGR 30 (3)). Second, the Minister has the power to exempt any vessel or person from any provision of this Act (sect. 23 (2) (l)). According to his mandate, the Director is in a better position to know the status of fishery resources more than a Minister. If the Director makes a decision to deny, revoke or suspend a licence based on necessity for proper management, the Minister within his power still has the mandate to abrogate it. These kind of overlapping and conflicting mandates are adverse to proper administration of fisheries and are likely to cause a negative impact on the same.

The law makes a provision for public or consumer involvement in controlling unlicensed fishing and/or fish trade, which could also be considered as a technical measure. This is done by restricting the purchase of fish by any person from an unlicensed fish dealer, fisher, fish farmer or fisherman's cooperative society, and prescribing penalty measures for the contravention of the regulation (reg. 58). This

excludes the purchase of ready fish for eating from a catering institution (reg. 58). Although this provision might not have been meant to act as a management measure, or based on public awareness of environmental issues, it can be used as a tool to fight against unlicensed fishing and fish trade in environmental public awareness campaigns. This will of course only make sense if the licensing authorities educate fishermen on the need for sustainable fishing and include terms expedient to sustainability in fishing licences.

cc) Requirements for local vessels

Any local fishing vessel wishing to carry out fishing activities in Kenyan fishery waters must be registered as required by section 7 of the Fisheries Act and issued with a certificate of registration in the form provided by regulation 3 (2) of LN 34/91.[125] The licensing officer may require the vessel to be inspected to ascertain whether it complies with the provisions of the Act before registration (FGR 3 (4)). After registration, the vessel is issued with an identification number which is subsequently entered in the register of registered vessels (FGR 3(5)) and is deemed to have a licence required for a local fishing vessel (FGR 8). The number must be painted on each side of the bow of the vessel within 7 days and must be clear, legible and visible at all times (FGR 4 (1) (a), (b)). The change of ownership of a registered vessel must be applied for by the person transferring and the person to whom ownership is being transferred (FGR 6 (1)).

A registered vessel must be seaworthy before proceeding on a fishing voyage (FGR 7 (1)). If a fisheries officer, upon inspection of such a vessel, finds it unseaworthy, he shall detain it until it is made seaworthy and a certificate of seaworthiness from an authorized examiner is produced (FGR 7 (2)).

All of the above are general management measures, which are applicable in both inland and marine waters. However, the powers of the Director to appropriate them in promotion and management efforts have been discharged in the past mainly in inland waters. As a result, the FA did not place any concrete restrictions on gear use

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125 A sample of the required certificate (Form DF/CR1) is printed in the first schedule of FGR.

in the EEZ except a provision in reg. 10 (b) of FFFCR stating that the Director may include the types, size and amount of fishing gear as a condition for a fishing licence. The only other provision, which could be interpreted as applying to EEZ, is reg. 43 (2) of FGR which states that a 'seining net whose mesh sizes are less than 50 mm when diagonally stretched shall be prohibited fishing gear except for fishing of *Rastrineobola* (Omena)'. Although the fish species referred as an exception in this provision is most likely found in inland waters, there is no indication that the provision is addressed exclusively to inland waters, and hence may be equally applied in the EEZ.

In 2001, a number of specific restrictions for marine fisheries including seasonal restrictions on trawling, the need for an approved TED? on trawlers, ban on the use of monofilament nets, seine nets, harpoons and spear guns (Kenya Gazette notice no. 7565) were put in place. The legal notice number 214 of 2003 prohibited the use of scuba gear and spear guns for fishing lobster and *beche-de-mer*. These laws have not been enforced except for beach seine used in some near shore areas.[126] However, the Fisheries Department has implemented a satellite observer system to monitor trawlers and in addition, on-board observation by fisheries officers is carried out periodically.[127]

Apart from the general prohibition of gear, absolute prohibition of any gear in a particular area (fishery) is permitted by law. In fact, the Director has the power in such cases to attach an additional prohibition by forbidding the mere possession of such gear in that area by notice in the Gazette (sect. 5 (2)).

3.1 Special fisheries management measures in the exclusive economic zone (EEZ)

a) Institutional/organisational structures

The EEZ is mainly governed by the Fisheries Act Cap 378 and subsidiary legislations thereto. By virtue of this Act, the main institution involved in the promotion and

126 McClanahan et al., 'Management of the Kenyan coast'.

127 N. Muthiga, pers. comms.

management of fisheries in 'Kenya fishery waters'[128] is the Fisheries Department. In spite of jurisdictional arrangements limiting the KWS activities to marine parks and reserves, shortages of personnel and capacity in the Fisheries Department necessitate the KWS' involvement in the general coastal zone, as well as the EEZ, albeit to a limited extent, especially as far as management efforts are concerned.[129] Hence, the KWS is to be regarded here as the FiD's vital partner in the governance of the EEZ.

Fisheries Department

Observers

Observers are mainly allocated the duty of scientific data collection (FFFCR, 44 (1). Like authorised officers, they may also carry out management and enforcement activities (ibid.)). However, they are assigned to foreign fishing vessels by the Director and may carry out those activities only at his authorisation (ibid.).

Kenya Wildlife Service

As mentioned above, the activities of the KWS are limited to marine parks and reserves. However, since it is rich in personnel and capacity, it contributes immensely in the EEZ, mainly within the reef system through unregulated participation.[130] This is mainly in research, monitoring and enforcement. The KWS possesses the capacity and personnel to carry out 24hrs surveillance.[131] It has wardens, cadets, rangers and divers who do under-water monitoring.[132] It also has other facilities such as offices, boats and vehicles, and carries out education and awareness programmes.[133] The KWS has all along been able to finance all these activities from its own budget as it always had greater ability to attract donor funds

128 "Kenya fishery waters" is defined as inland waters and the waters of the marine zones (extending to 200 nm according to the Maritime Zones Act of 1989 (Rev. 1991)), and excludes Government and private fishponds and farms not established for commercial purposes.

129 Interviewee, KWS Nairobi.

130 Ibid.

131 Ibid.

132 Ibid.

133 Ibid.

through bilateral and project funding.[134] It also collects fees for entry into parks and reserves.[135] However, an ever broadening mandate, and the need to share available funds between fund-generating and non-fund-generating parks and reserves has seen KWS' budget diminish.[136]

The KWS' contribution in the governance of the EEZ faces a number of challenges. Based on its legal background, the KWS believes on strict management and exploitation of resources based on proper knowledge thereof, and as a product (or benefit) of good management (cf. WCMA, preamble). It is therefore of the opinion that excessive licensing done by the FiD, without proper knowledge of status (fish species) and behavioural patterns of marine resources, is contrary to good management and detrimental to sustainable fishing.[137] The KWS also feels that the FiD does so irrespective of shortage of capacity and personnel to control, monitor and enforce regulations.[138]

Probably the worst hitch for the KWS is the lack of a legal backbone of its activities in the EEZ: the KWS cannot enforce measures undesired by the FiD especially curtailing exploitation as the FiD has exclusive jurisdiction in the EEZ over this matter.[139] This results to conflicts and hardships in collaboration between the two departments.[140]

There are prospects of 'friction free' collaboration between the FiD and the KWS once the Memorandum of Understanding (MOU), which is expected to clearly lay out their mandates and basis for sharing authority and management[141], takes effect.

b) Requirements for foreign vessels

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134 McClanahan et al., 'Management of the Kenyan coast', 920.

135 Interviewee, KWS; cf. ibid, 906, 915, 920.

136 Ibid.

137 Interviewee, KWS: The interviewee quoted a case when Mexico proposed a deal to the FiD to import twelve (12) dolphins from Kenya. 'There was no information or prior study of the behaviour of dolphins, ecology, or even whether Kenya had any dolphins'. Fortunately, the 'request came to KWS' desk and was rejected'.

138 Interviewee, KWS.

139 Ibid.

140 Ibid.

141 McClanahan et al., 'Management of the Kenyan coast', 906, 926.

Licences

Apart from formal conditions and procedures discussed below, licences for foreign fishing vessels should under normal circumstances be issued based on the ecological status of the fishery. Section 12 of the Act states that the Director issues such a licence after determining '(…) that there are fishery resources surplus to the Kenya fishery industry that may be harvested under the licence. From that he may establish the quantity of the surplus that may be harvested and make that requirement a condition of the contract. He also specifies the period of validity of the licence (sect. 13). Such licences may, however, be revoked or suspended due to lack of compliance or where such action is necessary for proper management of fisheries (sect. 13, cf. FFFCR 16).

These provisions are misleading as proper allocation of quotas can only take place with adequate knowledge of a fishery's resources, e.g. the species and stocks of fish available. Presently that knowledge is scarce[142] and in addition, monitoring and surveillance in the EEZ is deficient.[143] Hence, this law could be said to be in the books but not in use. It is possible that quotas are apportioned as reg. 33 of FFFCR, which requires notification of completion of quota, indicates, albeit without understanding how much damage the allocation could cause to the fishery. Depending on feedbacks and information from foreign fishing vessels concerning the fishery or their activities in the fishery cannot be a reliable solution.[144]

According to sect. 12 of the Act, an application for a licence may be made either directly to the Director or through a diplomatic representative of the flag state of the craft (FFFCR, 4, 5). The government of the flag state or the inter-governmental organisation (e.g. Tuna Association)[145] to which the craft belongs ought to have

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142 Cf. Gitonga/Achoki, 'Fiscal reforms'.

143 Ibid.

144 Cf. Gitonga/Achoki, ibid.: Longliners unlike other foreign vessels, for example, are exempted from the annual fee of US $20,000 because they claim that the fish are only available in Kenyan waters approximately three months in a year. Unfortunately, the FiD might or is not able, to prove how reliable this information is.

145 Cf. S. Mwikya, 'Fishery access agreements with distant water fishing nations: critical negotiating issues', (2005) http://www.ictsd.org/dlogue/2005-05-09/2005-05-09-Mbithi.pdf, accessed on 15.08.2006; S. Mwikya, 'Fisheries access agreements: trade and development issues', (2005) http://www.ictsd.org/pubs/ictsd_series/nat_res/Mbithi_2006.pdf, accessed on 15.08.2006: Japan's fisheries agreements with coastal states, for example, do not involve the

signed a fisheries co-operation agreement with the Government of Kenya (FFFCR 6). As discussed later, the Kenyan Government has not signed any fisheries co-operation agreement with any country as yet.[146] Hence, no basis exists for the practical implementation of this provision.

A fishing plan must be approved by the Director (FFFCR 6, 7). This or any proposal to revise it may be submitted to the Director from time to time by the diplomatic representative of the country in respect to which an apportionment of the allowable catch was made (FFFCR 7). It outlines the proposals for taking from the Kenya fishery waters the country's apportionment and includes, inter alia, information concerning the following:

a) The area in the EEZ in which fishing will be carried out by the craft of the country;
b) An exact number of fishing crafts from that country that will be engaged;
c) The estimated times for arrival in and departure from the EEZ of such fishing crafts;
d) The proposed duration of the fishing plan;
e) An outline of the calls into Kenyan ports to be made by the fishing crafts of that country during the duration of the fishing plan;
f) An outline of all other proposed operations in support of the fishing crafts of that country in the EEZ during the duration of the fishing plan; and
g) Any other information required by the Director in order to exercise his powers.

Other requirements include having a local representative for the craft with authorisation to act as well as accept legal responsibility on behalf of the owner and master of that vessel (FFFCR 8) and supplying a performance bond in respect to payment of royalties (FFFCR 6 (1) (h)).

Japanese government. All arrangements permitting access to Japanese vessels into the EEZs of other countries are either signed between Japanese Tuna Association and coastal countries or take the form of licence fee arrangements between a specific Japanese company and fisheries authorities of coastal countries.

146 Cf. Gitonga/Achoki, 'Fiscal reforms'; cf. C.O. Okidi, 'Enforcement of Kenya's EEZ fisheries through access agreements', http://www.law.pace.edu/environment/2006-abstract-summaries.pdf.

A licence for a foreign fishing vessel may contain such terms and conditions as the Director, with the Minister's approval, may determine. These may be such terms and conditions as listed under regulation 10 (a) – (s) of LN 35/91 which include, inter alia:

a) The stock, size, sex, weight and quantities of fish to be harvested;
b) The types, size and amount of fishing gear that may be used or carried on board, and the modes of storage of that gear when not in use;
c) The amount of by-catch that may be retained;
d) The requirement to take on board authorised officers or observers;
e) The inspection of any fishing or fishing-support vessel at any specified periods;
f) The landing of fish in Kenya;
g) The provision of statistical and other information, including statistics relating to catch and effort and reports as to the position of the vessel;
h) The training of Kenyan citizens in the methods of fishing employed by the foreign fishing vessel and the transfer to Kenya of technology relating to fisheries;
i) The marking of the fishing vessel and other means for its identification;
j) The installation on the fishing vessel and maintenance in working order of a transponder or other equipment for the identification and location of the vessel and of adequate navigation equipment to enable its position to be fixed from the vessel;
k) Directions, instructions and other requirements given or made by vessels or aircraft of the Kenya Armed Forces or other government vessels to the fishing craft that shall be complied with; and
l) Fees and other related charges to be paid.

The Director may modify the fishing plan and/or the licence (FFFCR 11 (1)) and shall subsequently notify the craft's local representative concerning the terms of the modification (FFFCR 11 (2)). The licence must be kept on board at all times and in good condition in a place where it is safe and can be readily inspected by an authorised officer (FFFCR 14). If the Director determines that the foreign fishing vessel has failed to comply with the conditions of the licence, or deems the licence a threat or an impediment to the proper management of the fisheries, he may revoke or suspend it for the period he deems appropriate (FFFCR 16 (1)). A notice of revocation shall be delivered by the Director to the local representative of the vessel after which

the owner or master shall ensure that the licence is delivered to the designated person within seventy-two hours (FFFCR 16(2), (3)). A party aggrieved by the decision of the Director may make an appeal and the decision of the Minister shall be final (FFFCR 17).

Sect. 23 (2) empowers the Minister to also make regulations to control fisheries. These include regulations on foreign participation in fisheries, licensing of foreign fishing vessels, handling, storage, and processing of fish, inspection of fish trading and processing establishments and fish products, management and control of fishing ports and waters. He also has the power to exempt any type of fishing gear, vessel or any person from any provision of the Act, etc.

Fees

A foreign fishing craft must pay a non-reimbursable minimum fee of US $20,000 annually, or at agreed intervals, and royalties (FFFCR, second schedule; reg. 6 (1) (g), (h)). The Director determines the percentage of royalties to be paid based on the total catch, as well as the value of tuna fish and by-catch assumed caught in Kenyan EEZ (FFFCR, second schedule).

Control measures

In order to control the activities of foreign fishing vessels in Kenya fishery waters, the law has laid down the procedure on how these should behave while in or leaving Kenya fishery waters. Any foreign fishing vessel that has not been licensed under reg. 6 of the EEZ (Fisheries (Foreign Fishing Craft)) Regulations must not undertake any fishing within the territorial waters of Kenya (FFFCR 18 and 19 (2) (a)). Such a vessel must keep all fishing gear stowed in a manner that it is not readily available for fishing (reg. 19) and shall comply with specific provisions under regulation 19 (1) (a) – (d) regarding fishing gear, nets, trawl boards and weights, and bottom/skiff and helicopter for purse seiners. This equally applies to any licensed fishing vessel before it receives port inspection (as it enters the EEZ from the high seas) or after it has been granted clearance to leave the EEZ (reg. 19).

Any foreign fishing vessel intending to enter the Kenyan EEZ whether licensed, or for the purpose of furtherance of or making an application for a licence must notify the Director twenty-four hours before the entry. The notification must indicate the name, call sign and flag state of the craft; the latitude and longitude of the point at which the craft will enter the EEZ; the port the craft will proceed for inspection; the species of fish on board the craft, and the quantity and condition of each species (reg. 21).

Any foreign fishing vessel wishing to tranship fish to another vessel in Kenyan fishery waters must do so at the port designated by the Director, at the time authorised for the purpose by him, or at the direction of an authorised officer (reg. 20).

The Director may exempt any foreign fishing vessel from any inspection requirement(s) at his discretion (reg. 24).

Every vessel must keep a fishery log at all times in duplicate whenever it is in Kenyan fishery waters. The log should have details of daily fishing activities of the vessel concerning 1) the methods used in fishing, 2) the fishing effort of the vessel (indicated in terms of the number of hauls of trawls or seine nets and in case of the set nets or long lines, the length of netting or number of hooks set per day), 3) the area in which fishing was undertaken specified in longitude and latitude position, 4) the species of fish taken and the quantity and average size of fish of each species measured by weight and 5) the species of fish returned from the vessel to the sea and the quantity. The vessel might be required to give any other information that the Director may consider necessary so as to ascertain the activities of the craft in the Kenyan fishery waters (reg. 31). In addition, it must report weekly to the Director, or a person designated in the licence, with information concerning the identity of the craft, its geographical location, the quantity in kilograms of each species in the hold and those caught since the last port inspection or weekly radio report, depending on which one occurred last (reg. 32). Fishing operations must be conducted in such a way as to avoid any intentional or negligent pollution that could cause harm to any fishery resource or marine mammals (reg. 35). Any incident of pollution either through accident or necessity to rescue the craft or crew, or encountered by the

vessel, must be reported immediately to the Director (reg. 35). Lastly, the Director must be notified immediately the vessel has completed its quota. The quota is deemed complete once the apportioned amount has been collected from any fishery in the EEZ, or after so much as may only be collected of the apportionment from a specified area or by a specified method has been harvested (reg. 33).

Research

The other question concerns marine fisheries research activities. These are to be conducted in the maritime zones of Kenya only with the express consent of the Kenyan scientific authority and a permit by the Director (reg. 37 (1), 39). Any state or competent international organisation that is permitted to carry out such research must do it for peaceful purposes and to increase scientific knowledge of the marine environment in Kenya fishery waters (reg. 37). The application must contain a comprehensive description of the nature and objectives of the research project, the name of the sponsoring institution, its Director and the person in charge of the research project, the name and biography of all scientific personnel expected to be on board the research vessel and the methods and means to be used, including the name, tonnage, type and class of the research vessel and a description of scientific equipment on board (reg. 39). Also included is the precise geographical location in which the research project is to be conducted, the anticipated date of first appearance and final departure of the research vessel, or deployment of the equipment and its removal, and the extent to which it is considered that Kenyan scientists should be able to participate or to be represented in the research project (reg. 39). A copy of the research data must be surrendered to the Director before departure and results made available thereafter (reg. 40 (1) (e)).

c) Impact of, and coherence with pertinent international agreements and organisations relating to resource protection

The UNCLOS of 1982 gives coastal states the sovereign right to explore, exploit, conserve and manage fisheries resources located in their EEZ[147], which stretches up to 200 nm from the low-water baseline of the territorial sea (Art. 55-7). The right to access the EEZ fisheries resources and their benefits is thus subject to the duty to conserve and optimally use (Art. 62) them.[148] Proper conservation is to be achieved by determination of the maximum sustainable yield (MSY)[149] as qualified by environmental and economic factors and taking into account available scientific information (Art. 61).[150] Other states may be allowed access to the remainder (surplus) of the resources subject to conditions pertaining to conservation of resources and payment of allocated quotas (Art. 62 (4)).[151]

Although proper conservation and optimal use is in the interest of the international community, the burden of ensuring that the resources are not depleted is left to the coastal state (Art. 61 (2)). Kenyan laws pertaining to access to and sustainable use of fisheries resources have evolved tremendously so as to conform to pertinent international and regional international agreements, and recommendations of international, regional and national research organisations. As a result, laws have been formulated introducing regulations concerning open and closed seasons for fishing, prohibiting certain gears and methods and demanding, as well as recommending, the introduction of certain devices e.g. TED and VMS. The greatest challenge for Kenya is the lack of capacity to research in the EEZ in order to establish the status of the stocks therein, monitor and carry out surveillance of fishing activities and also enforce the EEZ regulations.

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147 Art. 56 (1) (a). For further information on the fisheries regime of the exclusive economic zone see M. Dahmani, *The fisheries regime of the exclusive economic zone* (Martinus Nijhoff, 1987).

148 See also E. Hey, '*The fisheries provisions of the Los Convention*', in Hey (ed.) (The Hague/London/Boston, 1999), pp. 13-29, at 21 ff; P. Birnie/A. Boyle, '*International law and the environment*', 2nd ed. (Oxford University Press, 2002), pp. 659 ff.

149 Interviewee, FiD.

150 E. Hey, '*The fisheries provisions of the Los Convention*', in Hey (ed.) (The Hague/London/Boston, 1999), pp. 13-29, at 21 ff; P. Birnie/A. Boyle, '*International law and the environment*', 2nd ed. (Oxford University Press, 2002), pp. 659 ff.

151 Cf. Hey, 'The fisheries provisions', p. 22.

Due to a lack of sufficient research, monitoring, surveillance and enforcement, many activities may end up at loggerheads with the pertinent international agreements and organisations. These include allocating quotas without proper knowledge of stocks or species and declaring a 200 nm EEZ without the capacity to either control IUU activities or even licensed ones. Again, this is mainly a matter of resources. The fact that even the most developed countries are not able to effectively manage and conserve fisheries in their EEZs[152] testifies that, developing countries need a lot of help in this area. It is expected though that regional collaboration within SWIOFC, SIOFA and such other bodies will help to improve the situation not only in the general region but also in individual EEZs. Consequently, laws and fisheries activities are expected to be more coherent with time.

d) Interim remarks

The present form of Kenyan law is rich and sufficient to ensure proper management of fisheries in the EEZ. What fails is its implementation and enforcement due to a lack of resources and capacity. It is clear, for example, that most of the control of foreign fishing craft is dependent on good faith and self-reporting mechanisms of the craft. Meanwhile, the status of the fishery in the EEZ is not well known as insufficient research is carried out. Unfortunately, there is still the fact that the gains derived from licence fees are minimal, especially in light of possible unsustainable fishing and damage done to the ecosystem. The expected introduction of Vessel Monitoring Systems (VMS) would probably ameliorate this situation, but without sufficient personnel capacity and financial resources, it would still be hard to eradicate violations.

3.2 Special fisheries management measures in the coastal zone

a) Institutional/organisational structures

There are a number of institutions involved in the governance of the coastal zone. These include the Fisheries Department (FiD), the Kenya Wildlife Service (KWS), the Forestry Department (FD), the Kenya Marine and Fisheries Research Institute

152 Birnie/Boyle, 'International law', p. 660.

(KMFRI), the Coastal Development Authority (CDA), Coral Reef Degradation in Indian Ocean (CORDIO) and the Coral Reef Conservation Program (CRCP).

Fisheries Department

The Fisheries Department is the main institute mandated to govern fisheries in the coastal zone.[153] This includes areas adjacent to marine parks and marine reserves. Marine parks are exclusively governed by the KWS, whereas marine reserves are corporately governed by the FiD and the KWS.[154] The FiD is primarily mandated for the promotion of fisheries[155], which includes development of traditional and industrial fisheries, fish cultures and related industries (FA, sect. 4). The Act lists a number of measures through which this could be done by providing extension and training services, conducting research and surveys, promoting co-operation among fishermen, promoting arrangements for the orderly marketing of fish, providing infrastructure facilities, stocking waters with fish and supplying fish for stocking (FA, sect. 4), and promoting modern fishing methods by providing financial assistance to fishermen (FA, sect. 24). As it has already been seen, some of these functions are defunct though still in books.

Licensing is also seen as a quasi means of promotion in the sense of encouraging more exploitation of fisheries. This is especially noticeable since the FiD no longer belongs to a ministry that is attached to the office of the president, which ensures easier access to finances.[156] Hence, the FiD has to generate its own resources to cover its budget.[157] This causes excessive licensing which results in conflicts between the FiD and the KWS, especially in marine reserves which are governed by both institutions:[158] the KWS is considered too restrictive by the FiD.[159] It also conflicts

153 Cf. McClanahan et al., 'Management of the Kenyan coast', 906.

154 Ibid., 911.

155 Ibid., 906.

156 Interviewee, FiD; cf. Gitonga/Achoki, 'Fiscal reforms': One of the constraints of the fisheries sub-sector is low funding levels for the Fisheries Department and the sector.

157 Ibid.

158 E.g. Kiunga marine reserve: interviewee, KWS.

159 Interviewee, KWS.

with the management role of the FiD itself and that of the KWS[160] as it will be seen below under 4 b)aa).

Kenya Wildlife Service

The Kenya Wildlife Service is primarily mandated for management and conservation of wildlife with focus on protected areas and endangered species.[161] The legislation issuing this mandate, the WCMA, does not address marine parks and reserves specifically but rather parks and reserves in general. Hence, certain features particular to marine resources may not be sufficiently addressed. However, in discharging its responsibilities, the KWS is guided by by-laws: in marine parks by fisheries' Gazettes, an approach, which is more or less an amalgamation of the FA and the WCMA, and in marine reserves by the Local Authorities Act and Local Council by-laws, but considering the FA and the WCMA – thus forming a tripartite Act.[162]

Although, legally speaking, promotion is not an outstanding role of the KWS, tangible promotion effects nevertheless ensue from its managerial role. The spillover effect from the no-take-off zones to disturbed areas does not only show the impact of KWS' ability to manage fisheries, but also testifies to its positive contribution towards promotion of fisheries.[163] There is more breeding in the no-take-off zones thus providing more fish in the disturbed and controlled fishing areas.[164] The number and species of fish are greater in the marine parks and marine reserves.[165] Consequently, the tendency of fishermen to concentrate in certain areas believed to have more fish has changed: now they tend to pitch their nets and traps very close to

160 A KWS interviewee quoted a case of licensing in Watamu marine reserve by FiD without involving or informing KWS.

161 McClanahan, et al., 'Management of the Kenyan coast', 911 (table 3).

162 Interviewee, KWS.

163 Interviewee, KWS.

164 Ibid.

165 Ibid.

marine parks.[166] This trend has also helped relieve formerly fishing-preferred areas from overexploitation.[167]

Aside its management role, the KWS carries out research within MPAs mainly in close collaboration with the KMFRI.[168] It also cooperates with CORDIO, the CRCP and the WCS.[169]

Forestry Department

The Forestry Department falls under the Ministry of Environment and Natural Resources. It is responsible for management of forests (coastal and mangrove) including licensing of logging and reforestation.[170] Mangrove forests are vital breeding and feeding areas for fish[171] and they also perform other vital functions for fisheries.[172] It means that degazettment of such forests as well as licensing community utilisation thereof for fuel wood, medicinal plants, etc. must be done with knowledge of the impact of such activities to fisheries and in consultation with other institutions such as the FiD and the KWS, and the KMFRI which are involved in the management of and research on fisheries, respectively. Most legislation fails to coordinate relevant institutions but rather acts autonomously without consideration of bordering interests. The Forest Act Cap 385 of 1962, for example, empowered the Minister to degazette forests or allow their excision at his own accord (sect. 4). The new Act of 2005 introduces consultation, EIA and approval of parliament before degazettment or excision of forests[173] and states clearly that '[A]ll indigenous forests (…) shall be managed on a sustainable basis for purposes of', among others, '(…) fisheries in mangrove forests' (sect. 40 (1) h)).

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166 Ibid.

167 Ibid.

168 Ibid.

169 Ibid.

170 McClanahan et al., 'Management of the Kenyan coast', 911 (table 3).

171 Marshall, 'Mangrove conservation'; Beck et al., 'The role of nearshore ecosystems'; Alongi, 'Present state and future'; cf. Sasekumar et al., 'Mangroves as a habitat': Mangrove inlets and creeks in Selangor, Malaysia are the habitat for 119 species of fish and 9 species of prawns. The majority of fish and all prawns sampled in the inlets were juveniles.

172 Marshall, ibid.; Beck et al., ibid.

173 Marshall, ibid.

The new developments in the regulation of forests are a signal of the need to go beyond immediate departmental considerations and to seek and encourage institutional consultation and collaboration where mandates overlap and/or conflict. Hopefully other ministries/departments will follow the same trend.

Kenya Marine and Fisheries Research Institute

The Kenya Marine and Fisheries Research Institute falls under the Ministry of Research, Technical Training and Technology.[174] It is administered by a Board of Management constituted under the Science and Technology Act of 1979.[175] Unlike the KWS and other bodies involved in fisheries and aquatic research, its jurisdiction is nationwide[176] and has a wide spectrum of research including all aspects of aquatic systems[177] and physical as well as social sciences – fisheries[178], pollution, socio-economics, information and data management etc.

Fisheries research is an interdisciplinary subject that involves the study of productivity ecology, physical and chemical characteristics of water (oceanography and limnology) besides studies which are directly related to fisheries biology, fishery diseases, stock assessment, fish nutrition, fisheries quality and marketing. In order to help better understand fisheries resources and their predictability (which is essential in exploitation and management), fisheries research aims to: establish quantities of fish stocks in inland and marine water bodies, innovate appropriate fishing technology for various types of fisheries organisms in different water bodies and habitats, document fish diseases that are a hindrance to fisheries development, and understand the biology and ecology of major species of fisheries organisms of economic and commercial importance for sustainable exploitation.

Socio-economics research looks at the use of aquatic resources not only from the point of view of monetary gains, but also the benefits of better health as a result of

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174 See East African Region, http://www.unep.org/regionalseas/Publications/parts_data/Convention.doc.

175 Ibid.

176 Ibid.

177 Ibid.

178 Ibid.

improved nutrition standards and conservation of resources through cultural and religious practices, which is one way of living in harmony with the environment. Furthermore, poverty alleviation and creation of employment are additional benefits.

Therefore, it aims at achieving cost-effective methods of sustainable exploitation of the aquatic resources (and the environment) through participatory approaches with communities in order to guarantee benefits to the latter.

Information and data management research strives to create adequate information on the state of the marine environment and resources, facilitate informed decision-making and the formulation of technology-related policies and plans, sustainable development, and the rational use or management of the environment and natural resources. Information channels play an essential role between researchers and innovators, and users. They are necessary since they give scientists access to results of previous work on which they can build. Hence, information and data management research aims at creating an authoritative aquatic information and data system for use in increasing food production, protection of the aquatic environment, and development planning. Additionary, it ensures scientists and other users the chance to access aquatic science information and data from local and international sources. It also ensures that aquatic information and data collected in Kenya are archived, have gone through quality control and have been analysed and interpreted for use by scientists.

Unfortunately, the low funding levels for research[179] and the unclear collaborative system for research data sharing between the institute and the key players of the sector has also inhibited fisheries growth.[180]

Coast Development Authority

The Coast Development Authority falls under the Ministry of Agriculture and Rural Development. It was established in 1990 by an Act of parliament, the CDA Act (Cap 449). The Act provides for the establishment of an Authority to plan, facilitate and

179 Gitonga/Achoki, 'Fiscal reforms'; Interviewee, KWS.

180 Gitonga/Achoki, ibid.

coordinate the implementation of development projects in the whole of the coast province.[181] The development areas covered are 'that part of the coast province within Lamu, Mombasa, Kilifi, Tana River, Kwale and the Taita–Taveta districts including the southern half of the Garisa District and the EEZ'.

The functions of the CDA include:

a) To plan for the development of the coastal area;
b) To initiate studies, carry out surveys and assess alternative demands on the natural resources of the coastal area, and to initiate, operate or implement projects in agriculture, forestry, wildlife, tourism, power generation, mining, and fishing;
c) To avoid the duplication of efforts by maintaining liaison with operational agencies of the government, private sector and others;
d) To implement projects with the primary aim of enhancing socio-economic development in the Coast province of Kenya; and
e) To advocates for the effective management of natural resources by encouraging development projects that minimise negative environmental impacts for sustainable development.

Tourist Department

Tourist department falls under the Ministry of Tourism. Its role is in management and regulation of all tourism activities[182] including licensing. Overlapping mandates, for example, between the Tourist Department, the FiD and the KWS results in conflicts. Tourists receive licences, for example, for deep diving from the Tourism Department without prior consultation with the MPA manager.[183] Unfortunately, tour guides who possess no training on fisheries, and hence, are incapable of tracking unlicensed activities, escort the tourists.[184] Tourists, for instance, destroy fishers' nets at times by cutting them.[185] This yields conflicts between the KWS, fishers and

181 Cf. McClanahan et al., 'Management of the Kenyan coast', 911 (table 3).

182 Tourism and recreational activities within MPAs include glass bottom boat tours, SCUBA diving, goggling, sailing, windsurfing and jet skiing: cf. McClanahan et al., 'Management of the Kenyan coast', 912 (table 4).

183 Interviewee, KWS.

184 Ibid.

185 Ibid.

divers.[186] It is therefore necessary that the Tourist Department consults and collaborates with pertinent institutes/departments while discharging its power especially where mandates overlap.

Municipal Councils/Local Government

Municipal councils are under the Local Government. They regulate, license and manage all city and town activities[187] through by-laws (cf. above, KWS). Actually, as mentioned above, the KWS is guided by an amalgamation of local council by-laws, the FA and the WCMA in discharging its activities in marine reserves.

Provincial/District Administration

Provincial and District Administration are under the Office of the President and are charged with liaising with the central government on all development activities at the grassroots level.[188] This should help the government not to come into conflict with any development policies and projects, including 'its own'. However, this is not always the case as there are often violations within the government by government officials.[189] Corruption is a vice that has an impact also on fisheries and needs to be seriously fought against.

Coral Reef Degradation in Indian Ocean

Coral Reef Degradation in Indian Ocean[190] is an operational program under the ICRI (International Coral Reef Initiative) which involves (approximately fifty) researchers

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186 Ibid.

187 McClanahan et al., 'Management of the Kenyan coast', 911 (table 3).

188 Ibid.

189 Cf. interviewee, the FiD: Although, according to the interviewee, trawling is prohibited in Lake Victoria (cf. FA, sect. 43 (1) (a) which states that "[T]rawling is a prohibited fishing method within five nautical miles from any point on the entire shoreline of Kenya waters of Lake Victoria), a senior official of the provincial administration once licensed trawlers to conduct fishing activities in Lake Victoria. It was only after the FiD and local communities resisted these activities that trawling stopped. Cf. E.C. Kamau, 'Environmental regimes and direct investment in third world countries', in Gerd Winter (ed.), *Die Umweltverantwortung multinationaler Unternehmen. Selbststeuerung und Recht bei Auslandsdirektinvestitionen* (Baden-Baden: Nomos Verlagsgesellschaft, 2005), pp. 147-185.

190 CORDIO is supported by SIDA (Swedish International Development Cooperation Agency), the Government of Finland, the Dutch Trust Fund of the World Bank, WWF (World Wide Fund for Nature) and IUCN (World Conservation Union): http://www.cordio.org/default.asp.

from eleven countries in the central and western Indian Ocean[191] – Kenya, Tanzania, Mozambique, Madagascar, Mauritius, Seychelles, Comores, Reunion, Maldives, Sri Lanka and India.[192] The program was created in 1999 to assess the widespread degradation of the coral reefs throughout the region.[193]

Coral reefs are highly productive and sustain the livelihoods and the well being of local communities throughout the wider Indian Ocean region by providing fish, other edible species and valuable natural resources.[194] In addition, healthy coral reefs attract tourists and protect coastlines against coastal erosion.[195] As a consequence of coral degradation, there is a decline in the availability of fish and other resources throughout the Indian Ocean.[196]

Gradually much of the research is focusing on the mitigation of damage to Indian Ocean coral reefs, which are severely degraded due to climate change and other stresses, including human activities[197], and on alternative livelihoods for people dependant on them.[198]

As mentioned earlier on, CORDIO does not only share research results with other institutions like the KWS and the KMFRI but also collaborates closely especially with the KWS in coral reef restoration work.

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191 CORDIO, Coral bleaching and mortality: assessment of the extent of damage, socio-economic effects, mitigation and recovery, http://www.cordio.org/default.asp; Brief History of CORDIO, http://www.cordio.org/background.asp; Riyadh, 'Coral reef degradation in the Indian Ocean', a paper submitted to the proceedings of 'International Symposium on the Extent of Coral Reef Bleaching' 2000, http://www.icriforum.org/secretariat/word/CebuCPC_6.doc.

192 Brief History of CORDIO, http://www.cordio.org/background.asp; Riyadh, ibid.

193 CORDIO, 'Coral bleaching and mortality: assessment of the extent of damage, socio-economic effects, mitigation and recovery', http://www.cordio.org/default.asp; Brief History of CORDIO, http://www.cordio.org/background.asp; Riyadh, 'Coral reef degradation'.

194 Brief History of CORDIO, ibid; Riyadh, ibid.

195 Ibid.

196 Ibid.

197 CORDIO, 'Coral bleaching and mortality', ibid.; Brief History of CORDIO, http://www.cordio.org/background.asp; Riyadh, 'Coral reef degradation'.

198 Brief History of CORDIO, http://www.cordio.org/background.asp; Riyadh, ibid.: Millions of people in the tropical development countries are dependant on coral reefs, as a protein source, or for income from fishery or tourism industries. Thus, the degradation of the coral reefs in the Indian Ocean is likely to have significant socio-economic as well as ecological effects.

Coral Reef Conservation Project[199]

The Coral Reef Conservation Project was started in 1986 to study the effects of human influences on Kenyan coral reefs. The project is hosted in the country by the Kenya Wildlife Service and, through long-term research clearance, is authorized by Kenya's Ministry of Science and Technology. The five major objectives of the Coral Reef Conservation Project are the following: 1) to determine the effects of marine parks, global climate change, fishing, and indigenous management on fishery catches, species diversity and reef ecology; 2) to develop methods to restore coral reefs that have been degraded by heavy fishing, pollution or coral bleaching; 3) to assist the organisation of relevant government agencies and social organisations in developing sustainable resource use for coral reefs; 4) to foster the professional development and training of marine scientists in coral reef ecology and management practices; and 5) contribute to the coordination and general development of coral reef conservation and science in the tropics.

Project employees and associates receive support for data collection, analysis, research and academic training. The Kenyans are the researchers and managers, working with regional governments in Kenya, including the Kenya Marine and Fisheries Research Institute, the Kenya Wildlife Services, the Fisheries Department, and regional universities and societies. The project works closely with the Kenya Wildlife Service and most importantly through the annual monitoring of the four marine protected areas; a program that has been maintained since 1987. It also works closely with Kenya's Fisheries Department by monitoring fish catches and the ecology of fished reefs in southern Kenya since 1991.

The project maintains relationships with foreign and local universities and supports graduate work and an internship program for African nationals. Interns learn and participate in the coral reef and fisheries monitoring methods, the analysis of the data and the production of reports and publications.

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199 The underneath information about CRCP is an excerpt accessed online at http://www.wcs.org/international/marine/marineafrica/kenyacoralreefconservation/crcpsummary on 3rd August 2006.

Employees, interns and students assist in the overall project goals as well as undertaking research on related subjects of their choosing.[200]

Traditional structures

Apart from government institutions, there are also traditional structures whose role and influence in the general management of coastal zone cannot be overlooked. In southern Kenya, for example, landing sites and settlements are associated with sacred coastal forests known as *Kaya*.[201] Each Kaya has two traditional elders who represent and uphold the traditions of these sacred forests (landing sites) and associated culture. As of recent, there are also two elected leaders of the resource-user community.[202] (The traditional elder-positions are passed down the family lineage by birth.) These four leaders mediate decisions and represent the landing-site (Kaya) community independent of government elected leaders such as chiefs and district officers.[203] This arrangement gives the Kaya community certain rights and privileges, which might be limited to, and formalised within, family lineage, clan or chiefdom.[204] Many Kayas in Kenya are gazetted and Kaya elders are (formally) recognized as having ceremonial rights and powers.[205]

With this kind of disintegrated roles and responsibilities, issues of coastal resource use and management were hard to handle. (E.g., disagreement between the FiD and the KWS increased with the introduction of MPAs due to conflicting mandates.)

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200 Examples of theses and dissertation research include 1) a study of the growth of corals in reefs exposed to different fishing gear, 2) a study of the population dynamics and early life history (i.e. reproduction, settlement and recruitment) of the keystone sea urchin species, *echinometra mathaei*, 3) a comparative historical and present-day analysis of the economic and ecological impacts of tourism and fishing on Kenya's economy and coral reef ecology, 4) the influences of tourism and fishing on the population dynamics and community structure of coral reef species in the Mombasa Marine National Park, 5) the effects of warm water on coral death and recovery and 6) an economic modelling study of the effect of the Mombasa MNP on fish catches and fishing income. Research intends to lend insight into the effects of fishing and biological factors affecting species diversity, population dynamics, extinction and fisheries productivity of coral reefs.

201 McClanahan et al. (2005), ibid, 904; T.T. Spear, *The Kaya complex: a history of the mijikenda peoples of Kenya* to 1900 (Nairobi: Kenya Literature Bureau 1978).

202 McClanahan et al., 'Management of Kenyan coast', 904.

203 Ibid.

204 Ibid.

205 N. Muthiga, pers. comms.

Therefore, the so-called Integrated Coastal Management (ICM) was introduced in the early 1990s[206] to, inter alia, address the coastal resources management issues by promoting collaboration, participation and coordination (the FiD and the KMFRI) between the various stakeholders. With the aim of achieving this, the CDA formed an ICM Secretariat in Mombasa mainly to deal with conflict issues between the various sectors and coordinate institutions with traditional single-sector programs.[207]

This process was not without handicaps at the beginning. Being a government process, it was resisted by the local communities especially because it followed a top-down approach thus marginalizing or completely leaving out the direct voice of local communities.[208] This resistance is subsiding as participation and involvement improves. This, in turn, is raising awareness and building trust.[209] It has also been noticed that fisher communities that interact more with the KWS have a higher compliance level.[210] Therefore, stakeholder involvement has proved to be a vital management tool in the Kenyan coast.

b) Instruments of fisheries management

aa) Access and catch restrictions, technical measures

There are a number of instruments used in the management of fisheries in the coastal zone. Since most of them depend on an institution or organisation, probably the most logical way of looking at them is by analysing them under respective institutions or organisations.

Fisheries Department

As mentioned earlier on, the Fisheries Act Cap 378 is the prime legal instrument regulating access and catches in all Kenya fishery waters, including the coastal zone. It establishes the FiD, which is responsible for management of fisheries nationwide.

206 For the history of ICM see McClanahan et al., 'Management of Kenyan coast', 905-906.

207 McClanahan et al., 'Management of Kenyan coast', 906.

208 Ibid., 907.

209 Interviewee, FiD, legal; Interviewee, KWS; cf. McClanahan et al., 'Management of Kenyan coast', 917, 921, 925, 928, 930.

210 McClanahan et al., ibid., 926.

The FiD uses various measures in order to regulate access and catch including licensing, regulation of gear[211] and methods, allowable catch and species, fishing seasons, control of weight and quality of landed fish etc. These measures have been detailed under II 3 c) aa) above. However, below are some fishing methods and gear, which are not only prohibited within Kenya inland waters, but also the territorial waters of Kenya (reg. 43). These include:

1) Seining for *Rastrineobola* (*Omena*) with any net whose mesh sizes are less than 10mm. when diagonally stretched;
2) Seining nets whose mesh sizes are less than 50mm. when diagonally stretched except for fishing for *Rastrineobola* (*Omena*);
3) Trawling within five nautical miles off the coast of Kenya within the territorial waters of Kenya;
4) Using explosives, poisonous or noxious substances, or electric shock devices in order to render fish more easily caught; and
5) Using any other gear/method in fishing trout except with a rod and line held in the hand and furnished with an artificial lure (where more than one lure are used, these should not be less than one metre between each other), or a landing net.

Unlike marine fisheries, there are stricter rules regulating access and catches in Kenya inland waters. These include bigger net mesh sizes, as well as specific sizes of particular fish. In Kenya waters of Lakes Victoria and Turkana, for example, the mesh sizes of gill nets should not be less than 127 mm when diagonally stretched, and landing of fish whose standard length is less than 25 cm is prohibited. In Lakes Naivasha, Baringo, Challa, Jipe and the dams of Tana and Turkell rivers, the gill net mesh sizes should not be less than 102 mm and the landing of Tilapia fish whose standard length is less than 18 cm is prohibited. It is prohibited to possess, buy, sell or expose for sale or barter fish whose landing is not permitted.

The use of gear is not explicit in these laws and in many instances has been interpreted to allow traditional or non-destructive gear according to the discretion of individual wardens[212] leading to resource overuse. They also do not provide for explicit allocation of quotas for local fishermen (see II 3 c) aa) above, catch

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211 Ibid., 911 (table 3).

212 Malleret-King, 'A food security approach'; cf. ibid., 927.

restrictions). According to reg. 31 of the FGR, '(…) the Director may impose conditions as to the stock, size, sex, weight and quantities of fish to be harvested (…)'. An authorised officer may also require fish landed to be weighed (FGR, reg. 42 (2) (a)). Hence, the law does not provide concrete means of allocating quotas. However, the FiD keeps a register of all licensed persons and vessels. Based on the fishers/vessels licensed for a particular fishery and knowledge of its resources, the Director may mitigate overexploitation of resources by using his mandate under sect. 6 (1), 10 (2) to ensure proper management of fisheries through:

a) Refusal to issue or renew licences;
b) Imposition of special licence and catch fees;
c) Preferential licensing in other fisheries; or
d) Revocation or suspension of licences.

Kenya Wildlife Service

Fishery waters, which have been gazetted as MPAs, are regulated by the WMCA and hence are under the direct mandate of the KWS. Nevertheless, the issue concerning who regulates access and catch in MPAs is determined by the nature of the PA: whether it is a park or a reserve. The FiD licences fishing in marine reserves (MRs), a mandate, which conflicts with that of KWS.

There are 52 protected areas in Kenya managed by the KWS.[213] From these, six complexes comprise marine parks and reserves.[214] They are Kisite/Mpunguti marine park and reserve, Mombasa marine park and reserve, Watamu marine park and reserve, Malindi marine park and reserve, Kiunga marine reserve and Diani-Chale marine park and reserve. Marine parks are usually smaller in size (up to ~ 28 km²) than marine reserves (~ 280 km²)[215] and are at times encompassed within the larger marine reserves.[216] Apart from marine parks and reserves, KWS manages coral gardens, which are fish breeding areas.[217] Marine areas adjacent to these fall under

213 Interviewee, KWS; cf. McClanahan et al., 'Management of Kenyan coast', 908.
214 Ibid.
215 Ibid.
216 McClanahan et al., 'Management of Kenyan coast', 911.
217 Interviewee, KWS.

the jurisdiction of the fisheries or the forestry department depending on the ecosystem and nature of extractive activities.[218]

Marine parks and reserves in Kenya form two distinct zones depending on the activities permitted. In marine reserves, controlled fishing, normally artisanal using traditional methods such as traps, hook-and-line and 2.5 inch mesh size net, is allowed. The type of gear, size of nets, etc. are controlled. Poisoning, use of explosives and dish seining are forbidden. In marine parks, on the other hand, there is absolute ban on fishing: no off-take of any resources is permitted. However, tourist and recreational activities such as glass bottom boat tours, SCUBA diving, goggling, sailing, windsurfing, jet skiing[219] and research are allowed.[220] This applies likewise to coral gardens (fish breeding areas) where tourism is allowed but only to view the biodiversity.

The KWS, which manages these areas, does so in accordance with its prime objective as stated in the preamble and Section 3 (3) of the WMCA. It is to ensure that wildlife is managed and conserved so as to yield to the Nation in general and to individual areas in particular, cultural, aesthetic and scientific gains, as well as economic gains as are incidental and not prejudicial to proper management and conservation. This kind of management demands strict control and surveillance, which is often not understood and/or supported by local communities and even at times disputed and/or resisted by fellow government institutions e.g. fisheries department.[221] Therefore, one of the greatest tasks for the KWS has been not only engaging in extensive awareness programs, but also searching for modalities to enhance participation in management by other institutions, stakeholders and local communities.[222] As a result, all MPAs in Kenya except Diani marine reserve have

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218 McClanahan et al., 'Management of Kenyan coast', 911.

219 MPA managers may restrict the area and time for this activity by legal notice.

220 McClanahan et al., 'Management of Kenyan coast', 912 (table 4).

221 Interviewee, KWS.

222 N. Muthiga, 'National perspectives of marine protected areas in Kenya', in R. Salm/Y. Tessema (eds.), *Partnership for Conservation: Report of the regional workshop on marine protected areas, tourism and communities* (IUCN Eastern Africa Regional Office and Kenya Wildlife Service, 1998), pp. 28-32.

management plans that were drafted with stakeholder involvement[223], albeit reflecting the prime objective of the KWS.[224]

Wardens and park rangers with a para-military training carry out the daily management of MPAs. The para-military training helps them to respond to control and security issues both on land and in the sea: their operations are financed by the KWS. However, due to a constantly increasing financial burden as a result of a broadening mandate[225], the KWS' ability to continue managing all areas placed under its jurisdiction has been a question of major concern. The burden has been eased to a certain extent by enhanced collaboration between MPA-authorities, local stakeholders and donor partners.[226] Whereas the local stakeholders either take up or help to deflect some of the management costs[227], donors help in monitoring, research and awareness (WCS, WWF), improvement of management through infrastructural support (ICRAN), management planning and training (KWS/Netherlands Wetlands Conservation and Training project), etc.[228]

As already mentioned earlier on, there are tangible results of the KWS' management efforts – in terms of stocks, species and relieve to disturbed and overexploited areas – in MPAs in spite of numerous challenges (see II 4 a) above, KWS). Therefore, MPAs are vital fisheries management tools in Kenya.

Besides the abovementioned measures, there are auxiliary measures which also serve as instruments of fisheries management that include traditional practices (management) and community based management.

Traditional management

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223 S. Weru et al., 'Management plan for the Mombasa marine park and reserve', in van't Hof T. (ed.), *Management plan: Mombasa marine national park and reserve* (Mombasa: Kenya Wildlife Service, 2001).

224 McClanahan et al., 'Management of Kenyan coast', 908.

225 Some of the MPAs do not generate any revenue but depend on visitor fee collected from other MPAs, which is the KWS' main source of operating funds.

226 Cf. Muthiga, 'National perspectives'.

227 E.g. for boats, vehicles, computers, SCUBA equipments etc.; provision of scientific expertise e.g. by the KMFRI and the CRCP; through willingness to comply by fishers and recreational users etc.

228 McClanahan et al., 'Management of Kenyan coast', 915.

While the national government policy to increase fish catch and regulate fisheries is done through national laws and institutions, traditional fishing is regulated by customs concerning time, space & gear restrictions.[229] This has, on several occasions, led to conflict between traditional and national leaders leading to few enforced restrictions.[230]

Traditional management practices may either show similarities or differences with modern science fisheries management. Their explanations, however, always differ. Fishers in southern Kenya, for example, do have time and space restrictions like modern fisheries management do. The reasons for these restrictions, however, relate to traditional and religious beliefs. Some areas are closed to fishing because they are believed to be sacred and haunted by spirits.[231] Thus, entry is only possible while in a 'pure and holy state' and to perform appropriate sacrifices.[232]

The difference in explanations makes it hard to amalgamate the two forms of management. First, though certain sites have the potential to be gazetted as closed areas or MPAs, traditional fishers might construe this to mean absolute loss of access[233] on the one hand. On the other hand, they might see the potential visitation of tourists as a loss of tradition[234] and a violation of sacred practices resulting to a decrease in fish stocks. Second, traditional and modern explanations of general decline in fish stocks might differ extremely. Whereas modern fishing management explains resource fluctuations in terms of ecosystem productivity, fisher numbers and human (fishing) effort, traditional fishers associate poor catches to breaks from traditions such as sacrifices, prayers or the use of untraditional fishing gear.[235]

Some of these explanations, e.g. discouragement of use of untraditional gear, might be helpful in limiting the catch. However, they might also hinder modernisation of

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229 McClanahan et al., 'The effects of traditional fisheries management'.

230 Ibid.

231 McClanahan et al., 'The management of Kenyan coast', 904.

232 Ibid.

233 Ibid.

234 Ibid.

235 McClanahan et al., 'The effects of traditional fisheries management'.

fishing gear. As long as chances for fishers to modernise their gear are slim, and support systems, e.g. subsidies, are non-existent, this presents no problem at present.

Beach Management Units

Another form of regulating access and catch is embraced in the draft policy 2006 – still awaiting Cabinet approval –, which advocates for the establishment of the so-called Beach Management Units (BMUs), or Community Management Units (CMUs). The draft policy 2006 is a subsidiary legislation on sustainable use and management of (coastal) resources.

The draft policy seeks to create an enabling environment for a vibrant fishing industry by providing optimal and sustainable benefits, alleviating poverty, creating wealth and taking into consideration gender issues. The policy addresses most aspects of fisheries management and development including environmental conservation, regional cooperation, research, surveillance and monitoring, as well as social responsibility and governance issues.

As mentioned earlier on, the Government initially used government command (top-down approach) to manage all natural resources, as it did not recognize co-ownership of the same. This separation resulted to a mess since the local communities and other potential stakeholders outside government ranks lacked incentives for involvement in management. The essence of BMUs, therefore, is to create a partnership between officialdom and local communities (stakeholders) in the management of coastal resources.

The policy encourages community participation in resource management and aims at institutionalizing co-management in the utilization and management of fisheries resources through appropriately incorporated Beach Management Units (BMUs) that shall be given (in consultation with the Fisheries Department) exclusive rights to landing sites. The policy further promotes the use of indigenous knowledge along side scientific information to improve management by involving the private sector, civil society and local authorities and NGOs in their individual capacity in the promotion of fisheries management.

The BMU structures are closely tied to previous traditional institutions that are related to safety, social order, religion, and fishing skills.[236] Traditionally, an elder of a landing site was involved in leading fishermen within a landing beach, advising on the effect of seasonality, the action to be taken in case of accidents associated with evil spirits, issuing permission to fishermen from other areas, ensuring social cohesion, as well as the management of gear and the environment. The BMUs are therefore replacing the institution of elders of the landing site through a system where the FiD wishes to devolve powers to the fishers to manage their resource at a local level.

The BMUs hope to be involved in the implementation of legislation with regard to destructive and banned gear, assisting in data collection where the FiD staff is inadequate, adopting modern environmental management practices in consultation with the fisheries department and other relevant organisations, fish marketing and solving of minor disputes. It is hoped that the BMUs will act as a link between the FiD and artisanal fishermen and play a leading role in fisheries management. The FiD has recommended that the BMUs be formalized and gazetted in order to give them legal mandate.

A more formal role for the BMUs through the clarification of fishing ground tenure, access rights, and support for the development and enforcement of local fishing rules is hoped to improve fisheries management. However, the socio-economic condition of fishers, their fear of losing landing sites, and the continued perception of the imposition of a marine reserve pose barriers to initiatives seeking to promote local level management.

The question on how BMUs could be implemented, still lingers in, and baffles the mind. Surely, local communities also need an implementing body/arm. How could this be formed?

One of the ways such a body could be formed is through amalgamation of existing traditional leadership and government (official) positions, where they exist. As

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236 Glaesel, 'Fishers, parks and power'.

already seen, landing sites (*Kayas*, which are actually beaches) in southern Kenya, for example, possess both traditional and government structures. However, due to conflicting interests in the past[237], collaboration was always hard. With the new approach, friction should drastically reduce, if not cease.

Excluding traditional leaders from management would still hatch similar problems as were experienced in the past. The local communities have a high level of respect for traditional leaders hence, any resolutions made with their involvement and contribution are easily accepted by the local peoples especially when also delivered by them (traditional leaders).[238] Future gazettement of beaches may follow a similar muster. On the level of enforcement of these bodies' resolutions, modalities for co-operation with institutions, which have functioning infrastructure and actively collaborating with other institutions in promotion and management of fisheries, should be sought. This will enable BMUs to benefit from existing findings and experience, as well as other forms of resources from existing institutions. Actually, the BMU authority should be more or less an executing body, but the results should mostly benefit the BMU community.

bb) Impact and coherence with pertinent international agreements and organisations

The answer to this question is not much different from that of 3.1 c) above. However, in addition to what has been said thereunder, the overlapping of mandates and lack of consultation between various government departments and other agencies negatively impact on proper management of fisheries in the coastal zone.

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237 McClanahan et al., 'The management of Kenyan coast', 904.

238 This statement is not based on literature citation but knowledge and experience of hierarchical order and command in the Kenyan traditional setting, and conforms to statements of several Africans from eastern, western and southern Africa. However, President Mwai Kibaki's recent meeting with 160 Kaya elders from the nine Mijikenda (coastal) communities, as reported by The Standard (Newspapers) of 3rd and 4th January 2007, clearly indicates this fact. The elders together with members of a newly formed 'Mijikenda Community Council of Elders Association' (MICOSEA) presented demands of projects they would like accomplished before this year's presidential elections as a condition of their communities voting back the President. Apart from demands concerning land, collapsed factories and a public university for the region, the elders demanded a Seafarers' training college and a fishermen college 'to provide skills and expertise to the many seafarers at the Coast'.

5. The national management system as applied in relation to the unsustainable impact of the 'North'

a) Fishing by EC/North American/Japanese fleets

aa) Bilateral access agreements

Fishing operations generally in the Indian Ocean region is dominated by Japanese, Korean, and EU fleets. North American fleets presence in the region, if any, is not of a considerable magnitude.

The Kenyan offshore fisheries zone, which is believed to contain vast and valuable stocks of fishery resources, is exploited by vessels from Distant Water Fishing Nations (DWFNs)[239] – mostly European and East Asian[240] – without the involvement of Kenyan nationals or any benefit for the country.[241] Actually, Kenya has not entered into any fishing access agreements with DWFNs.[242] As mentioned under section bb) below, some of these vessels operate under licences whereas the activities of some are illegal, unregulated and unregistered (IUU).[243] Kenya hopes to enter into access agreements with DWFNs in line with UNCLOS once sufficient knowledge of her stocks has been acquired.[244] Since the EU uses specific forms of access agreements with ACP countries, it is possible that any future access agreements between the EU and Kenya could take the form and conditions of existing EU-ACP access

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239 Okidi, 'Enforcement of Kenya's EEZ fisheries'; Gitonga/Achoki, 'Fiscal reforms'.

240 Habib, 'National report on fisheries'.

241 Gitonga/Achoki, 'Fiscal reforms'.

242 Ibid.; cf. Okidi, 'Enforcement of Kenya's EEZ fisheries'.

243 That does not mean licensed vessels never violate their licence obligations. As long as adequate capacity to monitor and control lacks, possible violations by any vessel cannot be ruled out.

244 Gitonga/Achoki, 'Fiscal reforms': The Government requested for technical assistance from Commonwealth Secretariat and was provided with a consultant to carry out a desk study on stocks and come up with recommendations and costs for stock assessment project. Cf. Okidi, 'Enforcement of Kenya's EEZ fisheries': suggests that access agreements should be made through a treaty framework with Tanzania, Mozambique, Somalia, Madagascar, Mauritius and South Africa, and should include conditions for licensing, enforcement procedures and conditions, surveillance and monitoring, and transfer of technology. This kind of procedure has potential to produce synergy in the region because, as Professor Okidi rightly notes, "cooperating countries could share surveillance and enforcement responsibilities, protect fishery resources, and strengthen the implementation of the 1985 Nairobi Convention on the Marine Environment".

agreements. Hence, it is interesting to see how future access agreements between the EU and Kenya could look like.

The EU pursues bilateral fisheries access agreements with coastal and island countries in order to ensure continual existence of its fleets in traditional fishing regions where they existed before the coming into force of UNCLOS, and also export overcapacity from EU waters to other regions with surplus stocks.[245] These agreements are of three major types:[246] Agreements with Financial Compensation (AFCOs), Reciprocal Agreements (RAs), and the so-called Second Generation Agreements (SGAs). Since the EU deals with the African, Pacific and Caribbean (ACP) countries mainly through one of the above types of agreements, i.e. AFCOs, the general information on this will be taken to apply likewise for Kenya being one of the ACP countries. However, it is important to mention that specific access agreements with Kenya could differ depending on the country's interests and based on particular peculiarities. Since the EU has initiated reforms to change access agreements into new types of Agreements called Fisheries Partnership Agreements (FPAs)[247], it is to be expected that sooner or later EU-ACP countries fisheries deals could shift to another direction. Actually, the FPAs are meant to phase out fisheries access agreements by replacing them.[248] Hence, we shall briefly look at the essence of the FPAs.

Agreements with Financial Compensation ('cash for catch' or 'cash for access' agreements[249]) allow access to fish stocks for financial compensation by EU or fees by private owners. They are based on the number and types of vessels, or a certain

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245 Mwikya, 'Fishery access agreements with distant water fishing nations'.

246 Ibid.

247 Ibid. The FPAs are to become part of a wider Economic Partnership Agreements (EPAs) process which is underway and expected to be completed by December 2007: see B. Gorez/B. O'Riordan, 'The future of EU-ACP countries fisheries relations', in R. Grynberg, (ed.), *Fisheries issues in WTO and ACP-EU trade negotiations* (London: Commonwealth Secretariat, 2003), pp. 99. Also submitted to the joint COMSEC – CTA meeting on ACP-EU Fisheries Agreement: Towards a greater sustainability 7-9 April 2003, ACP House Brussels, available online at http://www.cta.int/events2003/fisheries/Gorez-O'Riordan-EN.doc, accessed on 30.10.2006.

248 Mwikya, 'Fishery access agreements with distant water fishing nations'.

249 Ibid.

volume in terms of Gross Registered Tonnage (GRT) for a specified duration of time. For ACP countries in the Indian Ocean coast, these agreements mainly cover tuna.

Unfortunately, there are no clear policy guidelines in negotiating these agreements, thus disadvantaging weaker ACP countries, which lack a strong negotiating capacity in comparison to EU's negotiating machinery. The situation is escalated by these countries' (poor) economic status and thus desperate need for money.[250] Hence, financial compensation, even for similar species, varies considerably in these countries depending on the negotiating power and the level of economic need and is often unfair. IFREMER (1999)[251] estimates the compensation at only 2–17% of the market value of the catch.

Fisheries Partnership Agreements aim to transform EU-ACP countries present 'cash-catch' relationship in fisheries into a partnership able to contribute towards sustainable exploitation of natural resources.[252] This will involve, for example, the collaboration in stock assessments, monitoring, control and surveillance.[253] The FPAs, however, also intend to maintain European presence in the distant fisheries and protect the European fisheries sector interests amidst increased competition between distant waters fishing fleets from the Far East, the USA and the EU in most major fishing grounds.[254] It is also suspected that EU might use FPAs to force host countries to abstain from access agreements with EU competitors.[255] In addition, from an experience made in Economic Partnership Agreements (EPA) discussions made between the EU and East and South African countries in Nairobi in June 2005, it is feared that translating the EU's formal commitment to contribute to sustainable fisheries management into practice might not be so easy. In the meeting, the EU Fisheries Directorate General (DG) insisted on concluding bilateral tuna agreements

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250 Cf. Gorez/O'Riordan, 'The future of EU-ACP', fn 14.

251 IFREMER (French Institute for Research and Exploitation of Fisheries Resources), 'Evaluation of the fisheries agreements concluded by the European Community', European Union Study (Brussels, Belgium 1999).

252 Gorez/O'Riordan, 'The future of EU-ACP', p. 45.

253 Mwikya, 'Fishery access agreements with distant water fishing nations'.

254 Ibid.

255 Ibid.

with the South West Indian Ocean (SWIO) countries rather than multilateral agreements.[256] This raised questions as to whether the EU was really committed to contribute to sustainable management of fisheries bearing in mind the impossibility of conserving migratory stocks in a bilateral agreement, an issue, which has slowed the FPAs process.[257]

Reciprocal Agreements are a form of exchange or 'barter' trade and involve a reciprocal access agreement (between countries) into one another's EEZs. The EU has no such agreements with ACP countries since the latter lack the capacity/technology even to venture into their own EEZs.

Second Generation Agreements on the other hand are based on incentives for setting up joint ventures, which allow EU fleets quota access in the EEZ of another country. Such an agreement was only signed with Argentina, but was discontinued as it almost caused the collapse of hake fisheries due to overexploitation.

The Indian Ocean is one of the traditional fishing grounds for Japanese fleets. In fact, according to an IOTC list of vessels authorised to operate in the IOTC area[258], the presence of Japan's fleets is quite immense with 573 out of a total of 1, 972 vessels compared to 234 vessels from five EC Member States (Spain – 138, France – 75, Portugal – 16, UK – 3 and Italy – 1).[259] Most of Japanese vessels are longliners, with poles and lines, which target mostly yellowfin tuna, bigeye tuna, bluefin tuna and swordfish. However, Japan still possesses a significant number of purse seiners employed especially in seining skipjack tuna.

Japan does not pursue inter-governmental fisheries access agreements but rather concludes either agreements between the Japanese Tuna Association and coastal countries[260] or licence fee arrangements between a specific Japanese company and

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256 Ibid.

257 Cf. Mwikya, ibid.

258 See http://www.iotc.org/English/record/search.php.

259 Kenya, one of the IOTC Area-State has only 1 vessel operating in the area. See http://www.iotc.org/English/record/search.php: The 1,972 vessels are from 25 flags. Cf. http://www.iotc.org/files/proceedings/misc/ComReportsTexts/resolutions_E.pdf.

260 The Japanese Fisheries Commission is represented in negotiations for these agreements, but with an observer status.

the fisheries authorities of a coastal country.[261] These agreements, unlike EU and USA agreements, are not published ('closed agreements') and the financial compensation agreed is considered a private issue.

Apart from Japanese fleets, there is a heavy presence of Indonesian, Korean and Chinese vessels (669, 202 and 67 vessels, respectively) in the Indian Ocean area, with fisheries access agreements for tuna, most of which are based on payment of licence fees by individual vessels to the coastal countries.

As already mentioned, the significance of the financial compensation from these agreements to the EEZ State(s), in comparison to gains made by foreign fleets and damage on the ecosystem, is minimal.[262] This is exacerbated by EEZ States' lack of capacity to control licensed and unlicensed activities. In addition, some of the licences granted to foreign vessels lack vital information for determining the duration of validity. For example, from 573 Japanese vessels licensed to operate in the IOTC area, only licences for 18 vessels indicate when the vessels were licensed. However, even the 18 lack complete information on duration of licences: they do not indicate up to when they are valid. This leaves a serious gap, which can be easily utilized by corrupt fishing firms and local fisheries licensing authorities.

bb) Illegal foreign fishing and related legal issues

The Kenyan EEZ is highly unregulated due to lack of monitoring, control, surveillance (MCS) capacity and resources. In actual fact, the ocean bordering the East coast of Africa is known to be one of the world's most unregulated fisheries areas.[263] Although the region's EEZ States, i.e. Kenya, Tanzania, Mozambique, Comoros, Madagascar and South Africa (SA), have declared 200 nm Exclusive Economic Zones, most of them, save S.A., have no institutional and financial capability to exercise their jurisdictions.[264] This makes it impossible to follow up licensed activities as well as to curtail unlicensed ones.

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261 Mwikya, 'Fishery access agreements with distant water fishing nations'.

262 Interviewees, KWS and FiD.

263 Cf. Gitonga/Achoki, 'Fiscal reforms'; Habib, 'National report on fisheries'.

264 Gitonga/Achoki, ibid.

The larger part of catches are landed and processed outside the region.[265] DWF vessels hardly report catches to national authorities which makes information on species composition, quantities of catches taken by commercial operators, sources and timing of those catches scarce.[266]

According to existing information, approximately forty vessels have been granted fishing licences to operate in the Kenyan EEZ.[267] From these, about thirty engaged in illegal, unregulated and unregistered (IUU) activities[268] until recently when the FiD joined efforts with the Kenya Navy in order to boost surveillance. It would be illusionary though to imagine that IUU activities have instantly ceased as a result thereof. Much more needs to be done, and for that, immense help in form of resources, capacity, freewill cooperation and collaboration from DWFNs and fleets is necessary.

As a result of a lack of MCS capacity, there are hardly cases of near-to-judicial procedures. However, a recent case involving a Korean vessel shows that with more MCS and less corruption, much can be achieved.

According to the interviewee[269], the Korean vessel was licensed to carry out research activities in the Kenyan marine zone. After the expiration of the licence, it neither departed nor applied for renewal of the licence, but continued lingering on Kenyan waters for a length of time. It is not known what activities the vessel carried out during its extended presence. When the FiD came to the knowledge of this violation, the vessel was apprehended and held in the FiD's custody pending judicial hearing. Unfortunately, the vessel sought government intervention, which saw the judicial application by the FiD against the Korean vessel quashed.

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265 Ibid.

266 Habib, 'National report on fisheries'.

267 Interviewee, FiD Mombasa (interview carried out on 29 March 2006 at the FiD Nairobi). Cf. Gitonga/Achoki, 'Fiscal reforms'.

268 Interviewee, ibid.

269 FiD, Nairobi.

b) Purchase of fish by EC/North American/Japanese food companies

The Fisheries Act is the key legislation regulating all issues concerning fish and fish products, both for local and export market. It is supplemented by the Fisheries (Fish Quality) Assurance 2000 (subsidiary legislation), covering both the local and export market; the Food, Drugs and Chemical Substances Act; the Public Health Act; the Standards Act; the Safety of Foods (general legislation) and so forth. Besides, there are the standards of the Kenya Bureau of Standards (KEBS), a statutory organisation of the government established in 1974 by the act of Parliament Chapter 496, which are meant to ensure that foods both for local and export markets are of a good quality.

Kenya Bureau of Standards

The Kenya Bureau of Standards has developed 3800 Kenya standards which include KS05-40 that sets out labelling requirements for pre-packaged foods, KS05-1516 code of hygienic practice for the handling, processing, storage and placing on the market of fish and fishery products.[270] Furthermore, there is the KS1652:2000 code for hygiene practice on commercial fishing vessels. It also certifies firms to ISO standards. The FA supplementing legislations and KEBS standards, however, do not deal with issues of quality and standards pertaining to sustainability of harvesting of (fish) stocks, but rather to health safety and assurance concerns. Therefore, they are not considered of much value for our study.

Fisheries Act/Department

The Fisheries Act contains general provisions on fish and fish products' hygiene, and proper management of fisheries as listed above which, if enforced, should yield positive results as far as the standards of sustainable harvested stocks are concerned. Prescribed measures of proper management and harvesting as listed under part VI, VII and IX of the FA have been discussed above under structural numbering II 3 (c).

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270 KS05-1516 sets out the general guidelines for the hygiene requirements in the fish industry and is aligned to the EU Directive 91/493/EEC, thus enhancing fish exports to Europe and other countries that demand stringent hygienic requirements.

Probably the most remarkable feature of the Act as far as this question is concerned is the mandate it grants to the Director (in accordance with the powers conferred by sect. 5 and 23) to legislate specific measures – of great importance to sustainable harvesting of stocks – through Gazette Notices. Legal Notice No. 214 (Kenya Subsidiary Legislation) of 2003 is a good example of such measures. Although it touches on diverse Kenya fisheries, it clearly depicts how fish harvesting is controlled in Kenya.

Through the Fisheries (Prohibitions) Regulations (FPR) 2003 the Director prohibits the following activities:

a) Fishing, landing, processing, moving and trading in Nile Perch fish (*L. nilotica*) of a total length, which is less than 50 cm or 85 cm in L. Victoria.
b) Fishing, landing, processing, moving and trading in *Rastrineobola argentea* (Omena) in L. Victoria during the season 1.04 – 31.07 each year.
c) The use of scuba diving gear or spearguns to fish for lobsters and *Beche-de-mer* (sea cucumber) within territorial waters of Kenya as described under the MZA Cap 371 unless for experimental purposes.
d) Fishing, landing, processing, moving and trading in fish of any species from the L. Naivasha during the closed season 1.06 – 31.09, unless approved by Director
e) Fishing, landing, processing, moving and trading in lobsters of a total weight of less than 250 grams and crabs of a total weight of less than 500 grams.

As these measures clearly show, if violations occur during fishing, it should be possible to expose them in the landing phase. If any irregularities have escaped during the landing phase, it should be possible to terminate and penalise them at the processing phase. Since export fish and products pass through all three phases, there are sufficient opportunities to ensure an end product of high quality by all standards – as long as the prescribed measures are implemented and enforced

The processing phase is an important stage that needs to be briefly discussed. In order to ensure that fishing related industries observe regulations and measures foreseen by Kenya laws during processing and dispatch finished products of a high quality to the consumer (whether local or foreign), they must be in possession of a

Fish Processing Licence (FPL).[271] Such a licence is granted subject to fulfilling certain conditions (FGR, reg. 14). For export fish and fish products, the industry concerned must also possess an Approved Number for Export (ANE) (in addition to FPL).[272] The FiD has inspectors permanently attached to the processing establishments: an inspector is the monitoring authority at the industry.[273] He certifies as well as keeps record of every export batch.[274] Finally, he issues out a certificate as proof that the batch has fulfilled the safety and quality requirements.[275] A supplementary measure by the FiD involves issuance of a list of all approved and licensed fish processing industries to importing countries.[276] There are also national and regional initiatives to determine, among other things, which gear should be used in order to sustain stocks[277], for example, by the three East African countries, Tanzania, Uganda and Tanzania, within the Lake Victoria Fisheries Organisation (LVFO)[278], under the WIOMSA, the CRCP and CORDIO.

Again, the above measures are not meant to respond to importing (developed) countries' demands on sustainable harvesting, but they produce that effect, albeit not necessarily to the equivalence e.g. of EU standards. Requirements on developing countries' products by developed countries have concentrated on SPS measures up to date. There is a move, though, to introduce environmental, besides SPS, requirements on developing countries' products.[279]

An interesting and likewise ironical feature with fish for the EU market is that the most significant regulations for the fisheries sector are the EU directives 91/493/EEC

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271 Interviewee, FiD; FGR, reg. 14 (a sample (DF/L4) is printed in first schedule).

272 Interviewee, FiD.

273 Ibid.

274 Ibid.

275 Ibid.

276 Ibid.

277 Ibid; cf. M. van der Knaap et al., '*Key elements of fisheries management on Lake Victoria*', 5 *Aquatic Ecosystem Health & Management* Nr 3 (2002), 245-254.

278 M. J. Ntiba et al., '*Management Issues in the Lake Victoria Watershed, Lakes Reservoirs*', 6 *Research & Management*, Issue 3 (2001), 211.

279 Doha WTO Ministerial 2001: Ministerial Declaration, WT / MIN (01) /DEC/1, adopted on 14 November 2001, paragraph 32 (iii): "labelling requirements for environmental purposes," http://www.wto.org/English/thewto_e/minist_e/min01_e/mindecl_e.htm, accessed on 15.08.2006.

and 98/83/EEC. They are enforced by an authority approved by the EU, in this case the Fisheries Department, that is subject to periodic audits by the EU inspectors.[280] These directives focus on the SPS requirements and hence, do not contribute much to our study. Nevertheless, this situation shows that Kenya is not in a position to form and insist on standards that are adequate to ensure acceptable quality as long as importing countries are eager to use their own standards to hinder imports from Kenya. This applies to other developing countries as well. It is likely that once the EU ('North') successfully enforces requirements on sustainable fishing on its territory, the same will be pushed down the throat of the 'South' when the need arises.

III. Exemplary case of fisheries management: The Diani-Chale area

1. Promotion regimes

With an estimated area of 25 km^2, the economic activities within the Diani Chale area revolve around fishing, agriculture and tourism and are heavily influenced by the monsoon weather cycles. Apart from the Digo sub-tribe of the Mijikenda (who comprise the majority of fishermen in the area), a few migrant fishermen from Pemba and Tanzania have been reported.

Fishing mainly takes place inside the reef and has led to pressure on overexploited lagoon resources.[281] Fish caught include lethrinids, rabbit fish and parrotfish. Sea cucumbers, crabs, lobsters, squids and octopus are also caught[282]. Sport fishing is an increasingly popular activity in the area where tourists and residents are the main clients. The catch is sometimes difficult to quantify and evaluate as it is consumed locally or sold directly to hotels.

Two (green and hawksbill) of the five sea turtle species found in Kenya reside in the waters off the Diani-Chale area. The green turtle nests frequently but a few hawksbill nests have been recorded. Sea turtles are still exploited for their eggs, oil and meat in

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280 Abila, 'Food Safety'; cf. Halima Noor, Sanitary and phytosanitary measures and their impact on Kenya, EcoNews Africa, Nairobi, available online at http://www.unctad.org/trade_env/test1/meetings/standards/kenya3.doc, accessed on 30.10.2006.

281 McClanahan/Mangi, 'Gear-based Management'.

282 UNEP, 'Eastern Africa atlas'.

the area and for the wider national trade in turtle products.[283] Indirect harvesting is also a serious threat to the sea turtle populations. This is through accidental capture by set nets (of both artisanal and large-scale fishers), the loss of nesting beaches and the disturbance of the same due to tourism development.

Shells are collected by fishermen as a supplementary source of income and sold to dealers or directly to tourists or locals. Aquarium fish are also collected. There are potentially suitable areas for farming marine species such as crabs, lobsters, oysters, sea cucumbers and seaweeds, but there is no commercial development as yet. Experimental trials have been undertaken with oysters and seaweeds with the support of KMFRI at Gazi although there is no definite market.

In 2002, there were a total of 1,385 artisanal fishers (table 4) in the whole of Kwale district. The Diani-Chale area and Kinondo had the highest number of fishermen according to a study undertaken by CORDIO in 2003.[284]

Table 4. Number of Fishermen in Kwale District

Location	Sub location	Number of Fishers
Tiwi	Simkumbe	25
Waa	Kitivo	50
Diani	Ukunda	100 (211[285])
Kinondo	Kinondo	150
	Gazi	60
Msambweni	Vingujini	300
Pongwe/Kidimu	Shimoni	400
Vanga	Vanga	300
		1385

283 Wamukoya et al., 'Sea turtle recovery'.

284 D. Malleret-King et al., 'Review of Marine Fisheries'.

285 According to J. Rubens, 'An analysis of the benefits and costs of marine reserves'.

These fishers landed a total of 12,087.2 metric tonnes between 1991 and 2000 at an average of 1,208.7 metric tonnes per year. The gears used include traps, gillnets, beach seines, ringnets, hand lines and spearguns (most common). In Diani, spearguns and beach seines were widely used (representing 39.3% and 25.9% respectively)[286]. Out of the five gears used, spear gun and beach seines get 80% of the total catch. While spear gun fishers' average catch per day was 3.67 kg, that of trap fishers, handline fishers and beach seine fishers was 4.09 kg, 4.7 kg and 5.53 kg respectively. The study also found out that 5.8% of fishers were using gillnets and catching an average of 6.47 kg of fish per day. At Shimoni, traps and hand lines were mostly used.[287]

While the benefit of banning spear gun gear is to relieve pressure on the fishery, the suggested transfer of these fishers to offshore fishing which requires boats may be unlikely due to a lack of appropriate subsidies. Additionally, if spear gun fishers and beach seine fishers were to be reallocated to the traditional fishery, the reef fishery would incur a loss through a decrease in diversity as the fish species targeted by these fishers are not targeted by traditional gears. The ban of the gear would also likely affect a large number of fishers whose dependence on the fishery is as high as 80%[288] and might be in a vulnerable position already.

Catch data collected for five years (1995 to 1999) at 8 landing sites showed a decline in the catch despite constant effort at all the sites. The average daily catch per landing site showed an annual decline of 6 kg.[289] According to fishermen, catch per unit effort had dropped significantly over the last thirty years in the area.

Data collected over a period of ten years by the Fisheries Department on the other hand indicates a steady increase in the catches between 1991 and later in 1999, but in a decreasing manner (table 4).

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286 McClanahan et al., 'Fishery recovery'.

287 Malleret-King, 'A food security'.

288 Ibid.

289 McClanahan/Mangi, 'Gear-based Management'.

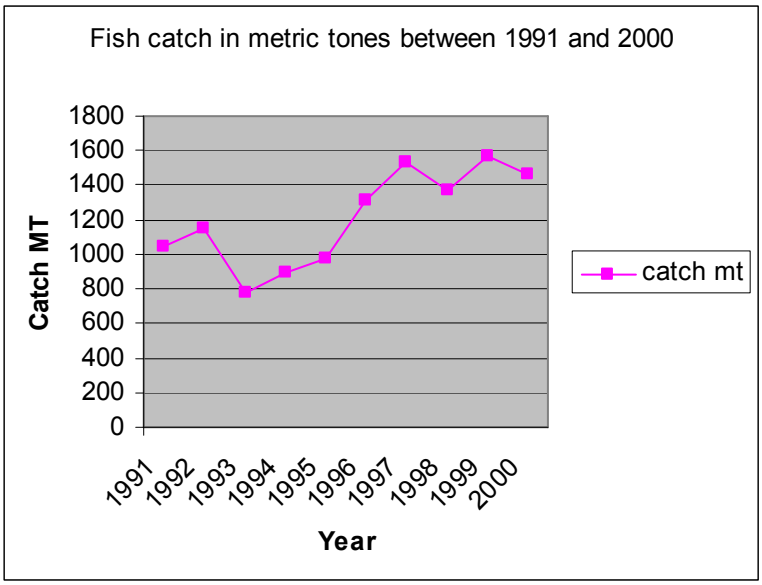

Figure 4. Fish Catch in Metric tonnes between 1991 and 2000

The decline in catch (approximated at 4 to 6 kg at the most productive site and season) is attributed to the increased number of fishers and the introduction of destructive gear, particularly the small meshed beach seines. The local fishermen estimate a 90% drop in catch since the introduction of beach seines.[290] In areas where beach seines were excluded, higher fish catches were recorded.[291]

Various levels of gear-use conflicts have been reported. These are mostly brought about by a lack of appropriate subsidy and non-existing access to credit following the collapse of fisher cooperative societies soon after their creation in the 1970s due to mismanagement.

2. Management measures

Many traditions of coastal peoples are viewed as traditional forms of marine conservation because, like modern fisheries management, they restrict fishing gear, fishing times, and places.[292] Traditional conservation often revolves around protecting religious sites and cultural symbols that are believed to protect food

290 McClanahan et al., 'Fishery recovery'.

291 McClanahan/Mangi, 'Gear-based management'.

292 McClanahan et al., 'The effects of traditional fisheries'; McClanahan et al., 'Management of the Kenyan coast'.

supplies.[293] Many of these traditions have decayed in recent times with the Islamisation of the culture and the authority has shifted towards national organisations, which results in the weakening effectiveness of the traditional leaders.

Generally, there are mixed perceptions with regard to marine fishery management in terms of closed area management[294], reducing the use of nets, supernatural factors (including giving sacrifices, repenting, and going back to traditional ways), and improved enforcement.[295] However, the management and acceptance of these regulations varies for a variety of reasons including legal, government agency, economic, cultural and technical. They are further complicated by diversity in ethnic practices, multi-species fisheries, numerous gear types and different levels of governance[296] leading to confusion, conflict, poor enforcement and unsustainable use unless efforts are made to understand and rationalize the multiple types of possible management.[297] Active participation in the enforcement of management has been proposed[298] and suggestions to achieve this include the Beach Management Unit (BMU) structure being developed by the Fisheries Department in consultation with fishermen and other stakeholders (see above).

The BMU framework is in many ways similar to the approach employed in the conservation and management of sea turtle populations in Kenya. The sea turtle conservation approach builds the capacity of local based organisations and modestly facilitates them to be involved in turtle conservation.

Empirical information on the implementation of sea turtle protection in Kenya

Kenya is home to five of the seven species of sea turtles, which exist globally in significant populations. These species include nester turtles such as the green

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293 Glaesel, 'Fishers, parks and power'.

294 McClanahan et al., 'Perceptions of resource users'.

295 J. Cinner et al., '*Periodic closures as adaptive coral reef management in the Indo-Pacific*', 11(1) *Ecology & Society* (2006), 31, also available online at www.ecologyandsociety.org/vol11/iss1/art31, accessed on 31.10.2006.

296 McClanahan et al., 'Perceptions of resource users'.

297 A.T White et al., '*Collaborative and Community-based Management of Coral Reefs*' (West Hartford, Kumarian Press, 1994); McClanahan et al., 'The effects of traditional fisheries'; Glaesel, 'Fishers, parks and power'.

298 McClanahan et al, 'Perceptions of resource users'.

(*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*) and olive ridley (*Ledpidochelys olivacea*). Also included are forager turtles, which are the loggerhead (*Caretta caretta)* and leatherback (*Dermochelys coriacea*). All five species are featured on the IUCN Red List of Threatened Animals (1996 version). The hawksbill and leatherback are listed as 'critically endangered' and the green, loggerhead and olive ridley as 'endangered.'

Results from interviews with fishermen have shown that marine fisheries and poaching of marine turtle products are the two leading causes of marine turtle population decline in Kenya. It is estimated (gillnet estimates, Fisheries Department) that illegal off-takes and the marine fishery industry reduce the turtle population by 6,000 individuals annually. Critical nesting and foraging grounds have also been destroyed by the impacts of unplanned shoreline development and poor waste disposal, erosion and destructive fishing practices (e.g. dynamite fishing), land-based run-off, water pollution and by the temperature rise associated with global warming. All the above have led to the drastic decline in the sea turtle populations.[299] Recent research shows that sea turtle populations have declined by between 25-75% due to habitat degradation occasioned by destructive methods of fishing, demand for trade and consumption of marine turtle products, as well as growth of coastal population and tourism.[300]

The legislation, which protects sea turtles in Kenya such as the Wildlife Conservation and Management Act (Cap 376) and the Fisheries Act (Cap 378), do not provide for the protection of habitats within which sea turtles inhabit except for nesting and foraging areas falling within MPAs. Apart from the legislation being considered not coercive and prohibitive enough, insufficient financial and human resources also continue to hamper enforcement of the legislation.

The Kenya Sea Turtle Conservation Committee (KESCOM) was established in 1993 to address threats afflicting sea turtles in Kenya against the backdrop of the

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299 J. Frazier, 'The status and knowledge on marine turtles in the Indian Ocean', East Africa Wildlife Society, 1975.

300 A.W. Wamukota et al., Community participation in the conservation and management of sea turtle in Kenya, available online at http://www.seaturtle.org/symposium/export.html, accessed on 5.07.2007.

aforementioned challenges by involving government institutions and the local community. Initial efforts to implement conservation and management objectives were limited to the Mombasa area (especially the area around the Mombasa Marine National Park and Reserve) and supported by the Kenya Wildlife Service.

Through increased support from the local community, government institutions (Fisheries Department, Kenya Marine and Fisheries Research Institute, National Museums of Kenya and Coast Development Authority), as well as private interests and volunteers, KESCOM has to date established fifteen community based Turtle Conservation Groups (TCGs) along the Kenyan Coast, covering 50% of the coastline.

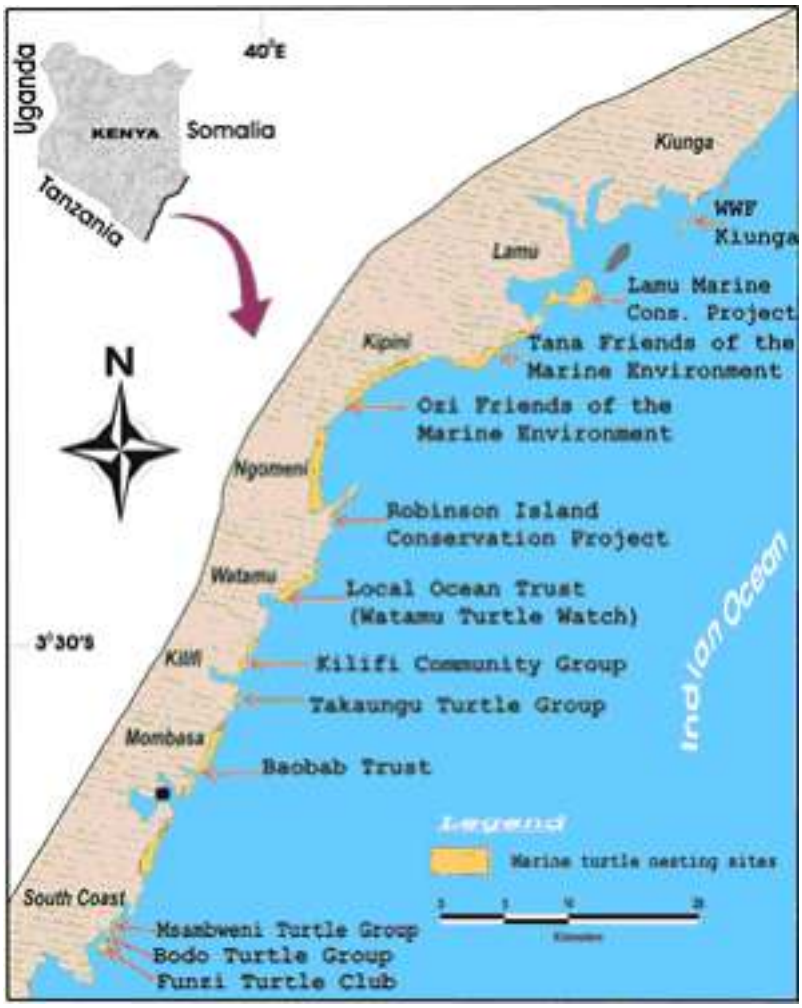

Figure 5: The spatial extent of KESCOM TCG activities

Through a cash incentive or with voluntary action, the TCGs are involved in the collection of turtle data and information at the ground level and engaging local communities in the conservation process through education and awareness programs and beach patrols and surveillance. This is done to protect turtle nests and nesting females, help with the tagging of sea turtles, research, and fishermen-turtle-release programs. They also participate in beach-clean up events and currently some of them are involved in habitat protection measures mainly focusing on mangrove replanting. The data and information collected by the TCGs is organised into a national database managed by the KESCOM.

The adoption of a voluntary and participatory approach has led to an increase in conservation action. For instance between 1991 and 2005, the TCGs in Kenya reported a total of 2,601 nests (laid within their areas of coverage). During the same period 1,863 dead turtles were reported to the KESCOM with about 85% of mortality cases due to the poaching and slaughtering of turtles and fishing activities (mainly trawling and entrapment in set nets). About 1000 turtles have been tagged and tag returns have been realised from Somalia and Tanzania.

In spite of the mixed success in some areas, the challenge of sea turtle conservation in Kenya still remains especially given that a large percentage of mortalities are human caused and mitigation measures partly involve major socio-cultural as well as socio-economic shifts. The lack of adequate financial and human resources also continues at a considerably slow pace for conservation action. However, the proposed BMU framework will hopefully add synergies to sea turtle conservation work in Kenya especially in areas not covered.

3. Enforcement, compliance and divergence between the 'law in the books and law in action'

Legally, all fishers are required to be registered by the Fisheries Department annually. However, these records are known to be inaccurate because either some fishermen do not register or the sites are inaccessible.[301]

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301 Malleret-King, 'A food security'.

Although the 2001 Fisheries Act bans all monofilament nets, seine nest, harpoons (spears) and spear guns, these gears continue to be used due to ineffective enforcement. Likewise, neither traditional leaders nor government officials discourage some of the banned gear.[302] However, a recent study[303] indicates shared perceptions among resource users and managers with regard to factors that increase yields and sustain the ecological basis for fishery production. This concerns, for example, the gear that traditional leaders and the government discourage, especially beach seines and spear guns.

4. Realisation of reforms

The Kenyan government's Economic Recovery Strategy Paper (2003-2007) is geared towards the realisation of wealth and employment creation. In recognizing research as a fundamental pre-requisite for fishery development, the draft policy provides for better coordination between fishery management and research. The policy requires the KMFRI, in liaison with the Department of Fisheries, to promote and coordinate multidisciplinary, participatory collaborative demand driven research activities aimed at sustainable utilization of fishery resources and to establish the co-management of research as the guiding principle.

An important departure is the proposal for the Fisheries Department is to establish an armed unit to enhance the enforcement capability of the Department and to eradicate poachers or illegal fishers. The Department hopes to collaborate with the Office of the President to provide modern patrol facilities including boats and vehicles to fishery field stations to facilitate fishery management and enforcement of the law.

In order to remove constraints and exploit the fishery resources, the following policy reform agenda have been proposed:

- Develop facilitative infrastructure which include landing beaches, cooling plants and access roads to reduce wastage and achieve the required sanitary and health standards.

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302 McClanahan et al., 'Perceptions of resource users'.

303 Ibid.

- Promote aquaculture to improve food security, nutritional status and incomes.
- Entry into agreements, which promote closer regional co-operation in the management and regulation of the trans-boundary fisheries resources including the control of water hyacinth.
- Encourage the growth of micro-finance institutions to provide credit to the sub-sector.
- Encourage sector incentives within the framework of fiscal reforms to deal with cost of exploiting fisheries resources, processing, preservation and export of the products.
- Exempt duties for jet fuel to reduce the transportation costs, encourage more exports and increase market share and foreign exchange earnings.
- Increase funding to the sub-sector to enhance research in production and preservation of fisheries species marketable in both local and overseas markets.
- Increase funding for equipments and surveillance of the country's Exclusive Economic Zone to stop encroachment by foreign fishing vessels and thus contribute to wealth and employment creation.
- Integrate the fishery sector into the country's agricultural commodities export strategy to reduce marketing costs to the sector.
- Develop strong regional integration networks to benefit from economies of scale and infrastructure development to facilitate thr export of fishery resources on a sustainable basis.
- Promote local and foreign investments in the establishment of a fishing processing plant and fishing fleets to tap the EEZ resource, especially the tuna fishery.
- Develop a comprehensive fisheries policy, to include a fisheries master plan in order to expedite growth of the sector through focused strategies.
- Carry out stock assessment and based on information gathered, negotiate fishing access agreements that would benefit Kenyans and ensure sustainable exploitation of fisheries resources.
- Build institutional capacity through training and the involvement of community participation in fishery management.
- Promote effective use of natural resources through appropriate extraction methods.

The need for the realisation of these reforms still persists, as their implementation requires huge financial investments.

IV. Empirical information on the EEZ fisheries management

The ocean bordering the East Coast of Africa is one of the areas of the world where fishing is largely unregulated. Although countries in the region, which include Kenya, Tanzania, Mozambique, Comoros, Madagascar and South Africa, have declared 200-mile Exclusive Economic Zones (EEZs), most of them (excluding South Africa) lack the institutional and financial capability to exercise their jurisdictions. While fisheries in the narrow coastal strips are harvested by coastal states, the more lucrative and much larger offshore fisheries are mostly harvested by distant-water fishing fleets from Europe and East Asia and for the most part, catches are landed and processed outside the region.[304]

The main species sought are the highly migratory tunas including skipjack, yellowfin and bigeye tuna. A tuna factory in Mombasa partly processes the catch from the foreign vessels and the product is exported as tuna loins. Up to 38 foreign fishing vessels have been licensed to fish in the Kenya EEZ. License fees earn the Government on average US $400,000. The fees charged are US $20,000 per vessel for all foreign fishing vessels except for longliners, which are exempted.[305]

Very little research has been done on fisheries resources in the deeper waters of the Kenyan zone to establish species composition, distribution, behaviour, and migration. Surveys on territorial waters carried out in 1970s found that long lining for tuna with small vessels is feasible from Mombasa. A fleet of ten small vessels could comfortably operate out of Mombasa to fish local stocks of adult yellowfin and bigeye for the high-priced sashimi market.[306] A FAO publication put the potential catch at around 3,125 metric tonnes per year by such a fleet.[307]

Kenya still faces a major challenge in the management of its fisheries within the EEZ. This is attributed to lack of an effective Monitoring Control and Surveillance System. The Fisheries Department depends on the Kenya Navy boats to carry out monitoring

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304 Gitonga/Achoki, 'Fiscal reforms'.

305 Ibid.

306 G. Habib, 'The Kenya marine fisheries. A final report of the Commonwealth Secretariat consultant on Stock Assessment', (A desk study, 2003).

307 Gitonga/Achoki, 'Fiscal reforms'.

and surveillance so as to ensure that distance water fishing nations pay the Government appropriate dues either through negotiated fishing rights and other arrangements or payment of fishing license fees with limited success.[308]

Additionally, access arrangements are poorly organised and, as a result, distant-water operators do little in the way of reporting catches to the national authority. The demarcation of the EEZ in accordance with the provisions of the United Nations Convention on the Law of the Sea (UNCLOS), and putting in place strategies to ensure profitable exploitation of the Zone, are invaluable EEZ management requisites. Additional propositions to address the management challenges include provisions on fitting vessel monitoring systems in all vessels fishing within the Kenyan EEZ, acquiring monitoring and surveillance capacity and resources, and joining the Indian Ocean Tuna Commission, a fisheries management body specializing in gathering information on the tuna fisheries in the region.

V. Conclusions

The decline in the marine fishery is generally attributed to overfishing brought about by increased human population. The increased fisher population has seen traditionally non-fisher tribes joining the fish trade in addition to migrant fishers and witnessed an upsurge of destructive fishing practices. The overuse of the reef area is particularly evident through the lower abundance of finfish and the increased numbers of sea urchins. Fish habitats have also been negatively affected by activities of the salt recovery industries, tourism and prawn trawling.

Domestic legal instruments are thorough enough and are theoretically sufficient to deal with problems of unsustainable utilization of marine resources. The Fisheries Act of 1989, for instance, empowers the Director of Fisheries, with the approval of the Minister, to issue regulations to promote the development of fisheries and aquaculture and to ensure the proper management of specific fisheries. This includes the possibility of declaring closed seasons and/or areas, access limitations, and restrictions on fishing methods, gear, and the characteristics of fish that may be

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308 Interviewee, KWS.

caught. The Act further establishes basis for the registration and licensing of local and foreign fishermen and fishing vessels, enforcement in terms of prohibited methods of fishing, including the use of chemicals and trade in fish illegally caught, as well as prohibition on fishing for marine mammals in Kenya waters. The Wildlife (Conservation and Management) Act, on the other hand, enforces regulation although only within marine protected areas. However, effective implementation of these and other legislations has suffered several setbacks, inter alia:

1) Lack of enforcement capacity/personnel especially in the EEZ;
2) Overlapping mandates;
3) Conflicting and/or contradicting mandates;
4) Economic status of enforcement personnel which at times force them to ignore or overlook violations in return for bribes;
5) Low levels of fines which deprive them the ability to serve as effective deterrents against violations;
6) Collapsed structures;
7) Unimplemented provisions which remain in books and not in use;
8) Unclear and at times incoherent interpretation of provisions: the use of fishing gear within national parks, for example, is not explicit and has in many instances been interpreted to allow traditional or non-destructive gear according to the discretion of individual wardens; and
9) Conflict between traditional and national leaders resulting to few enforced restrictions.[309]

The promotion and management of fisheries in Kenya also suffers due to its high dependence on the EU market. The EU demands stringent SPS requirements, which are often imposed impromptu, though developing countries are never involved in the legislative process.[310] As a result, new requirements often come as a surprise causing panic due to fear of losing the market.[311] This has caused excessive, and at

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309 The management and acceptance of fisheries regulations has seen conflicts arising due to socioeconomic, cultural, legal, economic, cultural and technical reasons, not to mention the multispecies fisheries, numerous gear types and different levels of governance.

310 Interviewee, FiD.

311 The safety and quality conditions imposed by various countries in 1997 and 1999 following reports of the presence of salmonella, cholera outbreak and the use of pesticides saw a decline in fish exports from Kenya by 68%. As a condition for exporting fish to the European Union (EU), all Kenya's fish factories instituted stringent quality control procedures like the Hazard Analysis Critical Control Point (HACCP). The fish industry is now governed directly by at least

times unnecessary, resources to be channelled into the implementation of SPS measures, thus depriving management efforts of needed resources.[312] It also affects the FiD's ability to develop a systematic and progressive way of improving the fishery industry.

Developed countries (the EU) need to be transparent about decisions (developments) they desire to undertake by involving developing countries in talks. They also need to give more time for implementation/compliance. Probably the FAO could also act as a link between developed countries and third world countries by tracking developments in industrialised countries and helping in training in the third world countries. The FAO could also set aside a fund to sponsor third world countries' representatives to take part in EU meetings. This way, third countries would be in the light of what is happening in the EU and have the opportunity of informing the EU legislators and policy makers of prevailing conditions in respective third world countries before decisions are made. They would also be able to communicate decisions to their countries early to allow satisfactory time for implementation.

A unique feature of the EEZ, as far as enforcement is concerned, is the possibility of building synergy through collaboration with regional states in order to curb violations. This has led to the formation of regional bodies such as the SWIOFC and the SIOFA. Unfortunately, some of these bodies are still lacking de facto existence because vital structures have neither been laid down, nor competences defined. Others lack strong backing due to non-participation of pertinent regional states. Worse still is the shortage of finances.

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six sets of standards operated through the Fisheries Department and the Kenya Bureau of Standards. They include requirements for handling and marketing fishery products based on HACCP principles and the practices governing fish production such as the handling, processing, packaging, and transporting of fishery products destined for the EU. Additionally, they include the standards regarding the construction of buildings, equipment, purification tanks, and storage tanks intended for holding fish prior to shipping, as well as on-premise laboratories, strict record keeping, and accurate labelling.

312 The impact of safety measures have been felt in terms of restructuring fish-processing factories and production lines; investment in newer, cleaner boats and preservation facilities and retraining fishermen and other workers on hygienic fish-handling practices. The implication is high price of fish for the domestic market and huge fish export costs.

Management initiatives suggested include the encouragement of responsible fishing practices and co-management structures, curtailment of destructive fishing methods, further development of Marine Protected Areas and the resolution of conflicts arising from the migration of foreign nationals from Pemba Island and the northern Tanzanian coast into south coast fishing areas. In essence, the incorporation of traditional fisheries management with the formal regime through the Beach Management Unit (BMU) is seen as a lasting solution.

In recognition of the fundamental pre-requisite for fishery development, the Draft Fisheries Policy provides for better coordination between fishery management and research. An important departure is the establishment of an armed unit by the FiD to enhance enforcement capabilities in eradicating illegal fishermen. The provision of modern patrol facilities (boats and vehicles) to fishery field stations will further assist in the management and enforcement of the law.

The policy reform agenda (in particular to develop facilitative infrastructure facilities), promotion of regional co-operation in the management and regulation of the trans-boundary fishery resources, encouraging the growth of micro-finance institutions to provide credit to the sub-sector, and subsidizing the cost of exploiting fishery resources, processing, preservation and export of the products, are important reforms agendas for the sub-sector.

Other important reform agendas including increased funding to the sub-sector to enhance research in production and preservation of fisheries, to improve equipment and build institutional capacity through training, and involvement of community participation in fishery management, collaborate well with the safety and quality standards imposed by the EU, albeit the cost of implementing the reform agenda is too immense.

Generally, future prospects are bright. There's much willingness to update the existing structures and to install more effective modern gadgets as well as increase and employ knowledgeable capacity in order to ensure proper management and hence sustainable fisheries. Better collaboration between the FiD and the KWS through the Memorandum of Understanding, closer interaction between the FiD, the

KWS, the KMFRI and other professional groups is expected to increase synergy. Involvement of all stakeholders in management efforts is expected to ease efforts and make implementation more effective. Also, installation of VMS in vessels will definitely make a big difference in the management of the EEZ. However, there is a deficit in the resources needed for the implementation process. Such a burden should be taken up not only by one or a handful of states, but by a wider group of the international community, especially the countries that benefit from the resources of those fisheries.

VI. References

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VII. Additional literature and materials

Coastal and marine ecosystems – Kenya	http://earthtrends.wri.org/pdf_library/country_profiles/coa_cou_404.pdf#search=%22kenya%20marine%20and%20fisheries%20research%20institute%22
Cooperation with other international organisations	http://www.acap.aq/acap/news/new_fishing_agreement_siofa
Doha WTO Ministerial 2001: Ministerial Declaration, WT / MIN (01) /DEC/1, adopted on 14 November 2001, paragraph 32 (iii): 'labelling requirements for environmental purposes'	http://www.wto.org/English/thewto_e/minist_e/min01_e/mindecl_e.htm
East African Region	http://www.unep.org/regionalseas/Publications/parts_data/Convention.doc
Environmental Fiscal Reform for Sustainable Development and Poverty Reduction	http://www.oecd.org/dataoecd/15/42/36309072.pdf
Fishery industry in Kenya 2005	http://www.epzakenya.com/UserFiles/File/Fishkenya.pdf
Gerald K. Mwatha (Report No: WIOMSA/MARG-I/2005 – 06), Stock assessment and population dynamics of penaeid prawns in the prawn trawling grounds of Malindi-Ungwana bay: the challenges of managing the prawn fishery in Kenya	http://www.wiomsa.org/data/content/DOCUMENTS/2006814135628673Gerald%20Mwatha.pdf#search=%22kenya%20marine%20and%20fisheries%20research%20institute%22
Gladys M. Okemwa et al., The status and conservation of sea turtles in Kenya, Marine Turtle Newsletter 105:1-6, 2004	http://www.seaturtle.org/mtn/archives/mtn105/mtn105p1.shtml

Information on fisheries management in the republic of Kenya	http://www.fao.org/fi/fcp/en/KEN/body.htm
Linking science to coastal and marine governance	http://www.rtcc.org/2006/html/res_tech_res_wiomsa.html
Management of the coast	http://www.kws.org/images/new-tariffs-2006.pdf#search=%22kenya%20wildlife%20conservation%20and%20management%20act%20%22
Maritime Zones Act Cap 371 1989	http://www.un.org/Depts/los/LEGISLATIONANDTREATIES/PDFFILES/KEN_1989_Maritime.pdf#search=%22kenya%20fisheries%20act%22
New agreement governing high seas fishing in Indian Ocean – SIOFA	http://www.fao.org/newsroom/en/news/2006/1000360/index.html http://www.acap.aq/acap/news/new_fishing_agreement_siofa
Nyawira Muthiga et al., The effectiveness of management of marine protected areas in Kenya, International Tropical Marine Ecosystems Management Symposium	http://www.icriforum.org/itmems/presentations/T14_Kenya.pdf#search=%22kenya%20wildlife%20conservation%20and%20management%20act%20cap%20376%22
Sam Weru, Policy implications in the management of Kenya's marine protected areas	http://www.kws.org/images/new-tariffs-2006.pdf#search=%22kenya%20wildlife%20conservation%20and%20management%20act%20%22
The Environmental Management and Coordination Act, 1999	http://reconcile-ea.org/wkelc/env_mgt_act.pdf
The Fisheries Act Cap 378 1989 (Rev 1991)	http://iodeweb1.vliz.be/odin/bitstream/1834/297/1/FishAct-Kenya1991.pdf
The Forests Act 2005	http://www.reconcile-ea.org/wkelc/Forest_Act.pdf#search=%22kenya%20forests%20act%202005%22
The Wildlife (Conservation and Management) (Amendment) Regulations, 2006	http://www.kws.org/images/new-tariffs-2006.pdf#search=%22kenya%20wildlife%20conservation%20and%20management%20act%20%22
The Wildlife (Conservation and Management) Act Cap 376	http://faolex.fao.org/docs/texts/ken7750.doc
WTO aspects of ACP-EU fisheries relations: executive brief	http://agritrade.cta.int/fisheries/wto/executive_brief.htm

VIII. Useful links

Compendium of legal cases	http://www.oceanlaw.net/cases/index.htm
Compendium of legal texts	http://www.oceanlaw.net/texts/index.htm
Documents centre	http://www.intfish.net/docs/index.htm
FAO country profiles and mapping information system: Kenya – fishery sector	http://www.fao.org/countryprofiles/index.asp?subj=6&lang=en&iso3=KEN
Fishery country profiles	http://www.fao.org/fi/fcp/fcp.asp
Indian Ocean Tuna Commission (IOTC) IOTC official website	http://www.intfish.net/orgs/fisheries/iotc.htm www.iotc.org
International fisheries organisations	http://www.oceanlaw.net/orgs/index.htm
International fisheries treaty database	http://www.intfish.net/treaties/index.htm
International organization profiles	http://www.intfish.net/orgs/index.htm
Internet pathfinder	http://www.oceanlaw.net/netpath/index.htm
Kenya Wildlife Service	http://www.kws.org/ http://www.kws.org/parks.html
List of parties to the Geneva Conventions	http://www.oceanlaw.net/texts/summaries/table.htm
Ministry of Livestock and Fisheries Development	http://www.statehousekenya.go.ke/government/livestock.htm
National Environment Management Authority (NEMA)	http://www.nema.go.ke/env_leg.html
OceanLaw On-Line papers	http://www.intfish.net/ops/
Ramsar Convention	http://en.wikipedia.org/wiki/Ramsar_Convention#The_Convention
South West Indian Ocean Fisheries Commission (SWIOFC) SWIOFC official website	http://www.intfish.net/orgs/fisheries/swiofc.htm www.fao.org/fi/body/rfb/SWIOFC/swiofc_home.htm
The Convention on Biological Diversity (CBD) Around the World	http://www.biodiv.org/world/map.asp?ctr=ke
The fletcher school, tufts university – Edwin Ginn library	http://fletcher.tufts.edu/multi/secretariatslinks.html
Western Indian Ocean Marine Science Association (WIOMSA)	http://www.wiomsa.org/

Science Association (WIOMSA)	http://www.wiomsa.org/about_us.htm
Wildlife Conservation Society (WCS)	http://www.wcs.org/international/Africa/kenya