Fisheries in the ESA-IO Region: Profile and Trends

COUNTRY REVIEW

2014

KENYA

SmartFISH

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KENYA

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This document was prepared as part of the activities of the Indian Ocean Commission (IOC)SmartFish Programme , under the FAO Fisheries management component, in the monitoring and analysis of major issues with implications for fisheries and aquaculture in the twenty countries from the Eastern Southern Africa-IOC region participating in the Programme. This has resulted in the preparation of twenty country baselines whose the purpose is to serve as easy-to-read and informative references for policy decision-makers, fishery managers, development partners and stakeholders. The baselines inventory and describe for each country the trends in status of fisheries, major social and economic dynamics of relevance to the fishery sector, policy, legal and administrative frameworks, and management regimes The present document relates to the baseline for Kenya.

The preparation mainly involved Mr Christophe Breuil and Mr Damien Grima, FAO consultants, who made essential contribution in drafting the text and developing infographic for publication on the basis of the analysis of official and grey literature and vast field experience in the region. Much gratitude is due to all SmartFish experts who act as reviser. In particular, Ms Clotilde Bodiguel Chief Technical Adviser of IOC SmartFish activities implemented by FAO, who provided the initiative, was instrumental in the editing and Mrs Florence Wallemacq, Outreach Consultant, assisted in the formatting for publication. Lastly, the editor would like to thank National and Regional Focal Points of the IOC SmartFish Programme for providing complementary data and information.

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BACKGROUND INFORMATION

1 Brief on the National Economy

Key figures on Macro economic data

2014- Source World data Bank - Latest reported data

Population

44.35
Million

2013

Employment to population ratio

60.4 %

2011

HDI ranking

145/187

2012

External balance

-5,674.2
million US $

2011

GDP

37.34
Billion US $

2012

GDP annual growth

4.56 %

2012

GDP per capita

864.7 $

2012

Agriculture % of GDP

29.34 %

2012

Kenya's economy is primarily driven by four sectors: financial intermediation, tourism, construction and agriculture (including agriculture, hunting, forestry and fishing). Growth of the national economy is highly correlated to the growth and development in agriculture. In 2012, the agriculture sector represented 29.34 percent of the GDP, showing a significant increase when compared to 2011 (26.9 percent). The main agricultural produce are cereals, horticultural produce, industrial crops (e.g. sugarcane), permanent crops (coffee and tea) and livestock products (OECD et al. 2013).

Industries in the manufacturing sector are mainly engaged in processing agricultural, metal, electrical and chemical products and fast consumer goods. Kenya also refines crude petroleum into petroleum products mainly consumed in the domestic market.

In 2012, total GDP in Kenya was about US$ 37.34 billion (World Bank). The GDP growth rate was 5.8 percent in 2010, 4.4 percent in 2011 and 4.5 percent in 2012. With an estimated population of 43.18 million inhabitants, GPD per capita was approximately US$ 865 in 2012.

Small and medium sized enterprises have continued to contribute significantly to Kenya's economic development. However, enterprises face many challenges including poor infrastructure, lack of qualified personnel and poor access to adequate credit and financing. The World Bank's 'Doing Business 2013' report ranked Kenya 117th out of 183 economies in its ease of doing business.

Furthermore, Kenya is faced with relatively high inflation, averaging 10 percent per year.

Kenya's trade balance deficit was estimated at US $6.4 billion in 2012 (World Bank). The country's current major imports are oil, manufactured goods, chemicals, machinery and transport equipment. The main exports are tea, horticulture, manufactured goods, raw material, coffee, and oil products.

Kenya is member of the EAC, COMESA and IGAD. From January to September 2012, Kenya sourced 10.9 percent of its imports from African countries (2.2 percent from the EAC region and 4.8 percent from the COMESA region), and the remaining 89.1 percent from the rest of the world. In the same period, 48.4 percent of exports went to African countries (26.3 percent to the EAC region and 31.7 percent to the COMESA region) (OECD et al. 2013).

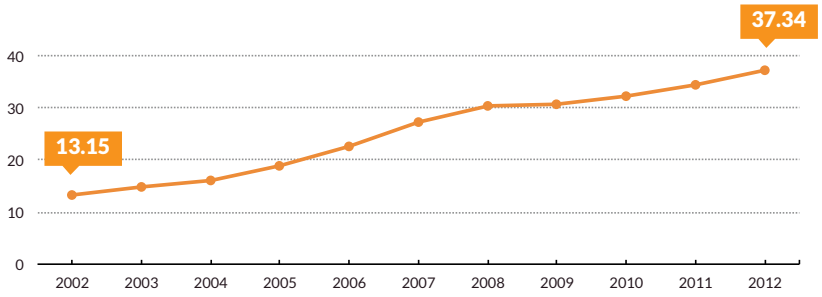
In 2011, Kenya's active population was 15.3 million (Mehler A., Melber H., Van Walraven K., 2014). The agricultural sector's share of total employment in Kenya is still important, despite it's persistent decline from 18.46 percent in 1998 to 16.26 percent in 2011 (OECD et al. 2013).

Kenya's Human Development Index (HDI) puts the country in the 'low human development' category. With an HDI score of 0.519, Kenya ranked 145th out of 187 countries in 2012.

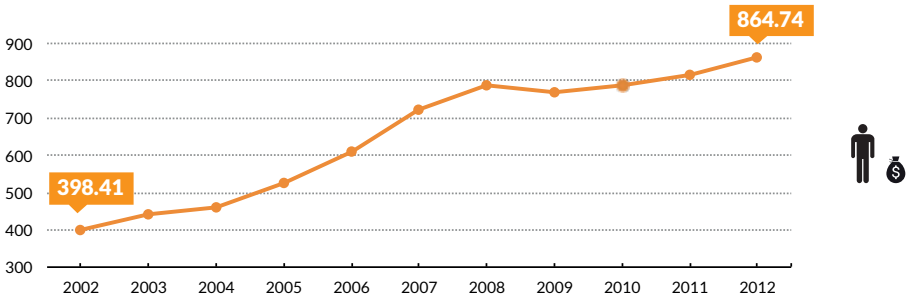
Trends

2014 - Figure 1-5 - Source World Data Bank - Last ten years

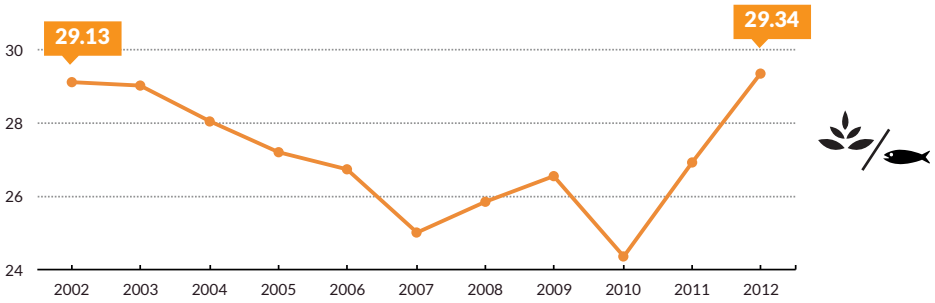
GDP (current billion US $)



GDP per capita (current US $)

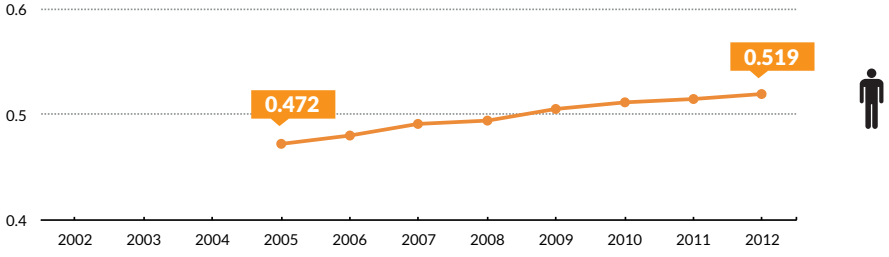


Agriculture % of GDP



Trade balance (current million US $)

Human Development Index



2. Policy and Planning Framework

2.1. General Framework

The overall policy and planning framework in Kenya was, until 2008, the Economic Recovery Strategy for Wealth and Employment Creation (ERS). The ERS, launched in 2003, emphasized economic growth and the creation of wealth and employment as a means of eradicating poverty and achieving food security. This was a major shift from a previous focus on poverty reduction and food security. The strategy identified agriculture as the leading productive sector for economic recovery.

In early 2007, the government started developing a new strategy to take over from the ERS. In June 2008, 'Kenya Vision 2030' was launched as the new long-term development blueprint for the country. The vision of this strategy is for a globally competitive and prosperous country with a high quality of life by 2030. It aims to transform Kenya into 'a newly industrializing, middle-income country providing a high quality of life to all its citizens in a clean and secure environment'. The vision is anchored on three pillars, including an economic pillar that aims to achieve an economic growth rate of 10 percent per year until 2030 to generate more resources to address the millennium development goals (MDGs).

Vision 2030 identified agriculture as one of the key sectors to deliver the 10 percent annual economic growth rate envisaged under the economic pillar. To achieve this growth, transforming smallholder agriculture from subsistence to an innovative, a commercially oriented and modern agricultural sector is critical.

A Strategy for Revitalizing Agriculture (SRA) was launched in March 2004 as a response to the ERS. The SRA also provided policy direction and outlined actions that needed to be taken in each agricultural subsector, including fisheries, to achieve the new vision. A new agricultural strategy (Agricultural Sector Development Strategy, 2010-2020) was developed to position the agricultural sector as the key driver for delivering the annual 10 percent economic growth rate. The overall growth and development of the agricultural sector is anchored in two strategic thrusts: increasing the productivity, commercialization and competitiveness of agricultural commodities and enterprises; and developing and managing the key factors of production.

Furthermore, a new Kenya Constitution was promulgated in August 2010 which has created new institutions to help improve public administration and governance. A devolved system of governance is also expected to come into force soon, with the creation of 47 counties and the abolition of the 8 former provinces.

2.2. Food Security Strategy

Over 10 million people in Kenya currently suffer from chronic food insecurity and poor nutrition, and between two and four million people require emergency food assistance at any given time. Nearly 30 percent of Kenya's children are classified as undernourished and micronutrient deficiencies are widespread.

The Food and Nutrition Security Policy (FNSP), 2011, provides an overarching framework covering the multiple dimensions of food security and nutrition improvement. It was purposefully developed to add value and create synergy to existing sectoral and other initiatives of government and partners. It recognizes the need for multi-public and private sector involvement, and that hunger eradication and nutrition improvement is a shared responsibility of all Kenyans. The policy and associated actions will remain dynamic to address contextual changes and changing conditions over time. This policy is framed in the context of basic human rights, child rights and women's rights, including the universal 'Right to Food'.

The broad objectives of the FNSP are: to achieve good nutrition for optimum health of all Kenyans;

to increase the quantity and quality of food available, and ensure that it is accessible and affordable to all Kenyans at all times; and, to protect vulnerable populations using innovative and cost-effective safety nets linked to long-term development.

The FNSP addresses associated issues of chronic, poverty-based food insecurity and malnutrition, as well as the perpetuity of acute food insecurity and malnutrition associated with frequent and recurring emergencies, and the critical linkages thereof. These issues are: Food availability and access; Food safety; Standards and quality control; Nutrition improvement; School nutrition and nutrition awareness; Food security and nutrition information; Early warning and emergency management; Institutional and legal framework & financing; and, Strategic approaches for policy implementation, monitoring and evaluation.

2.3. Fisheries in Public Policies

The new agricultural strategy 2010-2020 recognizes that the fisheries subsector has been unable to realize its full potential due to: inadequate supportive infrastructure such as cold storage, roads, fishing ports and electricity; inadequate budgetary provisions; environmental degradation due to invasive weeds such as water hyacinth; weak producer organizations; lack of collateral and access to credit facilities; absence of a saving culture; ineffective marketing information; and a lack of adequate and quality fish seed and feed. Other major hindrances include inadequate research–extension links; IUU fishing; weak MCS systems; low fishing technology; stringent sanitary and phyto-sanitary standards set by major export destinations; tariff and non-tariff barriers to international trade; and diminishing fish stocks.

To address these challenges and constraints, the strategy for the fisheries subsector is articulated around the following interventions: developing marine capture fisheries; developing inland capture fisheries; developing aquaculture; and promoting fish safety, quality assurance, value addition and marketing.

The development of marine fisheries is envisaged through adequate and strategic investment, proper resource management, reduced post-harvest losses and value addition, given that the exploitation of marine fisheries has the potential to double the fisheries contribution to GDP by 2015. The strategy also makes reference to the need for Kenya to attract foreign fishing vessels operating within the country's EEZ to off-load their harvests along the country's coastline. To tap into this potential, Kenya needs a fishing port with the appropriate infrastructure to handle up to 500 fishing vessels a day. Such a port should be constructed on Lamu island to enable exploitation of the commercial fishery in the northern Kenya coastal waters.

The development of inland fisheries is envisaged in particular through the improvement of sanitary and phyto-sanitary facilities to reduce post-harvest losses, the enhancement of fisheries cooperation for Lake Victoria for common fishery management measures, and the promotion of alternative income-generating activities and fisheries co-management practices. Reference, is also made to the need to develop the 'unexploited' fishery resource of Lake Turkana whose conservative fish potential is approximately 30,000 MT per year.

The development of aquaculture is envisaged through the support for research on certified fish seed and feed production, formulating and implementing aquaculture business plans, establishing public–private partnerships in fish seed and feed production, developing aquaculture policies and legislation, developing an aquaculture master plans and investment plans, and supporting fisheries participatory extension services.

It should also be noted that the FNSP recognizes that there is inadequate support for inland fisheries and aquaculture with regard to food security concerns. The FNSP states that despite the vast potential for investment, marine fisheries have registered low performance levels due to poor infrastructure and inadequate fishing technologies.

3. Fishery Resources

In Kenya, inland fisheries dominate the fishery sector contributing to about 85 percent of the national fish production, mainly from Lake Victoria. Marine fisheries and aquaculture contribute about 6 percent and 8 percent respectively. Current fishery production is estimated to be around 120,000 MT per year, excluding catches of tuna and tuna-like species by the Distant Water Fleet Nation (DWFN) in the EEZ.

The marine fishery waters in Kenya comprise coastal waters which extend over a 640 km shoreline and offshore waters, with an EEZ extending up to 117,000 km^2. The continental shelf is narrow with a total area of approximately 6,500 km^2, with fringing coral reefs extending between 0.5 km and 2 km offshore. The shelf is wider in the central Ungwana Bay area and in the north (North Kenya banks, subject to year-round up-welling). The coastal waters are also characterized by the existence of shallow off-shore banks. The coastal waters are warm and tropical and are influenced by the monsoon seasons. The ocean current regime along the Kenyan coast is influenced by the East Africa Coastal Current and the seasonally reversing Somalia current (Maina, 2012).

Coastal marine resources are composed of crustaceans (shrimps, lobsters and crabs), molluscs (octopus, squid and cuttlefish), demersal fish, and small and medium pelagics. Small pelagics, which are found in waters shallower than 200 m, in particular in water between 10 and 50 m deep, include sardines (*Clupeidae*), anchovies (*Engraulidae*) and cads (*Carangidae*). Medium pelagics include Spanish mackerel, little tuna (*Euthynnus alleteratus*) and frigate tuna (*Auxis thazard*), amongst others. The most productive areas are on the north coast near Lamu and on the south coast around Majoreni and Vanga.

The main species in the EEZ are the highly valued tropical tuna and tuna-like species that seasonally migrate to Kenyan waters. The main tuna species found in the EEZ and adjacent high seas are *Thunnus albacares* (Yellowfin tuna), *Katsuwonus pelamis* (Skipjack tuna), and *Thunnus obesus* (Bigeye tuna). Large pelagic sharks, in significant quantity, are also found in the Kenyan EEZ.

Recent comprehensive assessments of the marine fisheries potential are unavailable. The EEZ is estimated to have an annual potential of more than 150,000 MT, according to a desk study conducted in 2002 with assistance from the Commonwealth Secretariat (FAO, 2007-2015). The potential of small pelagics (mostly scads and mackerels) is thought to range between 18,000 and 20,000 MT per year (Habib, 2003).

According to the WIOFISH classification, which is based on the type of gear used, there were 31 active and 2 non-operating marine fisheries in Kenya in 2012, of which 25 were artisanal, 11 'subsistence', 7 'small-scale commercial', 4 'industrial', 2 'foreign fleet' and 1 'recreational'. Fisheries are multi-species with catch composition data that comprise 218 different catch items.

The inland water resources in Kenya cover a surface of between 10,500 and 11,500 km^2 depending on rainfall. The main water bodies are Lake Victoria and Lake Turkana (about 6,400 km^2). Other water bodies include lakes Naivasha, Baringo and Jipe, which have a total surface area of about 300 km^2. The main rivers include the Tana River (1,000 km length), and rivers Nzoia, Yala and Kuja.

Lake Victoria is the second-largest freshwater body in the world, with a surface area of 68,800 km^2, of which 4,128 km^2 (only 6 percent) is under Kenyan jurisdiction. It has a shoreline of 3,450 km, of which 550 km (16 percent) is in Kenya. Lake Victoria has a multi-species fishery of tilapiines and haplochromines, cichlids and more than 20 genera of non-cichlid fish, including mormyrus, catfish, cyprinids and lungfish

The bulk of the national freshwater fish production originates from Lake Victoria fisheries (139,000 MT in 2006, i.e. about 95 percent of total production). According to the FAO Country Profile, the other freshwater body of significant commercial importance is Lake Turkana with a fish production varying between 5,000 and 9,000 MT per year.

KEY INFORMATION AND FIGURES ON THE FISHERY AND AQUACULTURE SECTOR

4. Marine Fishery Sector

4.1. Status of Resources

As underlined in many studies, the lack of data in Kenya does not enable a satisfactory assessment of the status of marine stocks, with the notable exception of the more important larger pelagic species that are under the mandate of the Indian Ocean Tuna Commission (IOTC). For pelagic fishes, the best estimates of stock status, apart from IOTC assessments, can be found in the national reports of the SWIO countries presented to the SWIOFC Scientific Committee with methods based on observations and expert judgment (Cochrane, 2012).

In general, it is widely accepted that overfishing in the inshore areas has continued to cause a decline in fish catches, whilst the deeper territorial waters remain underexploited due to the local fishers' lack of deep sea fishing capacity.

Concerning pelagics, populations of coastal tuna and related species in the Southwest Indian Ocean Fisheries Project (SWIOFP) countries, including Kenya, are largely under-exploited or moderately exploited with only a few fully-exploited and two known to be over-exploited. The status of populations of medium pelagic species is uncertain due to a lack of sufficient data. The stock of sardines is fully exploited.

With regard to demersal resources, it is considered that most stocks are fully-exploited or over-exploited. The sea cucumber and spiny lobster fisheries are considered to be over-fished. The prawn fishery is not under threat, but shrimp harvesting by trawlers threatens other fisheries whose juveniles are caught as by-catch and creates conflict with other fishing techniques: indeed this led to the closure of the fishery in 2008 and the recent elaboration of a fisheries management plan.

4.2. Major Fishery Dynamics in the Artisanal Sub-Sector

Most domestic marine fishing in Kenya is carried out by artisanal fishers. Fishing activities are confined to inshore waters (maximum 5 nautical miles) within the reef ecosystem due to technological limitations.

According to the 2012 Frame Survey, artisanal fishing activities are carried out by approximately 13,700 fishers using 3,100 canoes. Most canoes are small and rarely go beyond the reef during the Southeast Monsoon season (May to August) due to the strong winds and rough seas. Dugout canoes (mtumbwi) and sailboats (mashua) are the most prominent fishing craft in use along the Kenyan coast (Maina, 2011). Only about 10 percent of the canoes are motorized (Okemwa et al. 2009). The most common fishing gear consist of gillnets, traditional traps, seine nets, long-lines, hand lines and spear guns. The artisanal fleet targeting coastal tuna and related species operates with rudimentary artisanal vessels not capable of going beyond 20 nautical miles and uses the ring net method for fishing.

The general trend in the artisanal sub-sector shows a steady increase of fishing capacity and effort. This result from the open access regime to fisheries combined with a decline in resources and an increase in the number of fishers due to the lack of alternatives in coastal economies. The total number of artisanal fishermen increased from 10,250 in 2006 to 12,077 in 2008 and 13,700 in 2012: an increase of 33 percent over a six-year period. The artisanal fleet consisted of 2,400 canoes in 2006 and 3,100 in 2012: an increase of 29 percent over this six-year period.

There is also competition between various resource users for the use of coastal areas, which has increased the intensity of conflicts amongst various stakeholders. Conflicts between fishers using beach seines and ring nets versus other gear are frequent. Declining fishery production, a huge amount of discard/bycatch (mainly juveniles), a loss of valuable diversity including pelagics, and degraded aquatic and terrestrial ecosystems have led to the loss of sustainable livelihoods for local communities (Maina, 2011).

A recent socio-economic study on FAD fisheries in SWIO (Failler et al., SWIOFP, 2011) observed that Kenyan marine fisheries could be in a growth phase given the relative youth of skippers (45 years) and the moderate level of exploitation of resources potentially accessible to small-scale fishers. The study also states that the on-going economic development in Kenya could gradually lift up the fisheries sector, provided that it becomes a financial investment sector.

4.3. Major Fishery Dynamics in the Industrial Sub-Sector

About 15 semi-industrial and industrial vessels used to fly the Kenyan flag. In particular, there was a little shrimp trawler fleet composed of six vessels under 24 m that used to operate in territorial waters until closure of the fishery in 2008. Most of the by-catch was consumed locally and the shrimp was exported. Of the six shrimp trawlers, three are under Italian ownership, and the other three are under Kenyan ownership. The shrimp fishery has opened up again, however, only two fishing licences were issued in 2012 despite the Prawn FMP allowing for eight licences (four shallow, four deep).

Other vessels flying the Kenyan flag include trawlers and long-liners. In 2010, two of these vessels were hijacked by Somali pirates. It should also be noted that a long-liner, under Taiwanese ownership, used to operate in the Indian Ocean without a Kenyan licence, authorization, or renewal of its annual registration documents. The vessel was recently deregistered as it was on the IOTC's black list.

The fishing vessel registry, managed by the Kenya Maritime Authority (KMA), now only includes 5 fishing vessels, all of them under 24 m (Breuil and Snijman, 2012).

The fishery resources in the EEZ are currently exploited by DWFNs through a licensing system under a 'private access agreement' regime. In 2010, Kenya issued 34 licences to tuna purse-seiners flying the Spanish, French and Seychellois flags (National Report to IOTC, 2011). During the course of a recent IOC-SmartFish workshop on data sharing held in 2012, the delegation from Kenya started that 47 purse-seiners were licenced in 2012. In 2011, the Kenyan authorities reported to the IOTC that due to Somali piracy no request for the licensing of long-liners had been received since 2007. The situation remained the same in 2012.

The conditions attached to DWFN fishing licences do not include an obligation to land or tranship (part of) catches from the Kenyan EEZ. Landing of tuna in Port of Mombasa has averaged 10,500 MT per year for the past 5 years, of which approximately 5,000 MT corresponds to direct landings by purse-seiners. Other recorded landings were by reefers that had received transhipments elsewhere and imports of fish in freezer containers.

This figure of 5,000 MT per year is believed to represent a very small part of total tuna catches in the Kenyan EEZ. However, in the absence of effective data reporting, which is a direct result of a lack of observers on-board the vessels, it is almost impossible to provide a real estimate of the amount harvested by DWFNs in the Kenyan EEZ.

4.4. Fishery Production

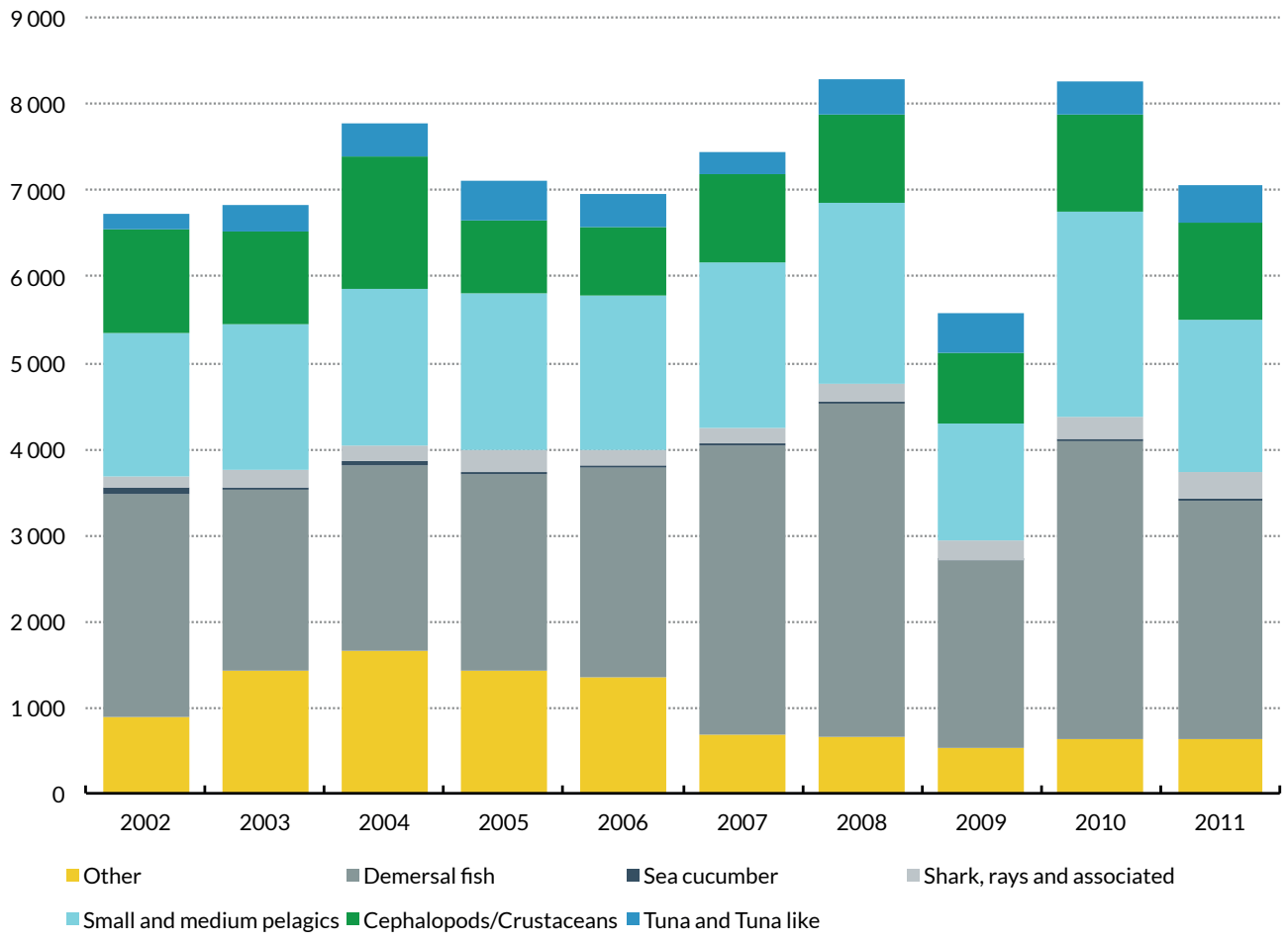
As shown in the table below (FAO FishStat), marine fish production has varied between 5,000 and 9,000 MT per year over the last decade. The landings are dominated by demersal reef and reef

associated species, and pelagic fishery species caught mainly in inshore waters.

Using information from the Kenyan Fisheries Department catch database, Maina (2012) analysed the trends in catches of pelagic species. He reported that the pelagic fishery accounted for an average of 27 percent of the annual production of Kenya's marine fisheries during the two decades from 1990 to 2010 with a production varying from 1,000 to 2,000 MT per year and an increasing trend from 1993 to 2010. The small and medium pelagics represent a combined total of about 85 percent of the pelagic fishery catches (Cochrane, 2012).

Domestic marine fish production in Kenya (in tons)

2014 - Figure 6 - Source FAO FISHTAT J (2002-2011)



4.5. Fish Utilization

Artisanal catch is landed along the coastline at more than 40 discrete landing sites. Landings are monitored and recorded by Beach Management Units (BMUs). Most of the artisanal production is sold on the domestic market. Some fish is sold fresh whilst a significant proportion is processed for later consumption. Artisanal Fish Processors (AFPs) prepare dried and smoked fish mostly for the local market, whilst Industrial Fish Processors (IFPs) freeze or chill fish for export and consumption in Kenya's urban areas (Maina, 2011).

A small quantity of high-value species that are exported mainly to EU markets, such as octopus, squid

and lobsters, are pooled and collected by agents at the beach, and transported to the processing plants which are all located in Mombasa. Agents collect the pooled catch every two or three days, depending on the season.

The domestic tuna supply chain in Kenya is yet to be developed (Tuna Strategy, 2012). In the meantime, frozen, cooked tuna loins (yellow-fin and skipjack) are the main fishery export products accounting for 89.6 percent of marine fisheries products exported over the last 5 years (Maina, 2012). All of the tuna landed in, or imported to Mombasa, is destined for one processing company, the Wanainchi Marine Ltd. processing plant, which processes tuna into (mostly) semi-finished products (i.e. frozen, cooked tuna loins) for export to the EU market (for the most part). The tuna company relies on catches from the DWFN and the fisheries derogation.

4.6. Infrastructures

Infrastructure for the artisanal fishery sector is rudimentary: no artisanal fishing port currently exists.

For the industrial fishery sector, the main port on the Kenyan coast is the industrial port of Mombasa. This port is one of the most important ports on the East-African seaboard. However, port calls into Mombasa have diminished substantially since the rise of Somali piracy. Fisheries vessels' movements and operations are a minor port activity and transhipments in port are said to have ceased completely since 2007 as a result of this phenomenon (European Commission, 2011). Other seaports in Kenya are Lamu, Malindi, Kilifi, Mtwapa, Kiunga, Shimoni, Funzi and Vanga. All seaports are managed by the Kenyan Port Authority (KPA).

5. Inland Fishery Sector

5.1. Status of Resources

The main catches in the inland fishery sector are composed of Nile Perch (*Lates niloticus*), freshwater sardine (*Rastrineobola argentea*) – known as Omena - and Nile Tilapia (*Oreochromis niloticus*). Other important stocks include Haplochromine cichlids and Catfish (*Clarius gariepinus*). The Nile Perch and Nile Tilapia are exotic species, whilst the others are endemic to Lake Victoria.

Most of the freshwater resources are considered fully or over-exploited. This is the case for the strategic resources that are the Nile Perch and the tilapine species. On Lake Victoria, there has been a steady decrease in fish diversity and quantity due to an increase in fishing effort over the last two decades. A study carried out by the FAO/IGAD (Maina, 2011) states that "the main challenge to the sector remains over fishing and habitat degradation attributed to open access fisheries regime". Other factors such as water hyacinth, pollution from riparian and catchment activities, soil erosion due to deforestation and other poor land use practices in the catchment area, have also negatively impacted the status of fish resources.

Nile Perch is only found on the Kenya/Tanzania border and the Kenya/Uganda border. The majority of Nile Perch processed in Kenyan fish processing establishments is thought to originate from Uganda and Tanzania. There are no, or very few, Nile Perch in the Winan Gulf (from Kisumu to the main body of the lake).

Berg (2011) noted that fishing on Lake Naivasha was halted for two years after fish biomass was found to be decreasing over the period 2002-2006 as fishing effort was increasing, resulting in lower catches. The effect this was having on the ecosystem led local stakeholders to halt all fishing activities and carry out research to support recruitment. Fishing later resumed but at a limited effort of 43 boats. Under similar circumstances, Lake Baringo was also closed for two years to allow

fish population levels to increase.

However, it should be noted that, according to the Agricultural Sector Development Strategy, 2010-2020, fishery resources of Lake Turkana are most likely under-exploited, with potential conservative estimated landings of 30,000 MT per year of Nile Perch and Tilapia for the most part.

5.2. Major Fishery Dynamics in the Sector

Inland fishing activities in Kenya are mainly carried out by artisanal fishers using small un-motorized fishing vessels propelled by sail and paddle. Fishing gears include gillnets, long-lines and seine nets. Beach seines have now been banned.

On Lake Victoria, a large number of fishermen work from manually propelled canoes or canoes fitted with outboard motors. According to the Fisheries Annual Statistical Bulletin, 2010, there were about 41,900 fishermen operating approximately 14,250 fishing crafts, representing an increase of 9 and 19 percent respectively over the last 10 years. The total number of gillnets of all mesh sizes also increased by 159.8 percent between 2000 and 2010 and long-line hooks increased by 160.6 percent during the same period.

5.3. Fishery Production

Not many statistics on the inland fishery sector are available. The Lake Victoria fishery, however, is relatively well documented.

Fluctuation of production on Lake Victoria is significant. The last survey on Lake Victoria showed that whilst total catches continue to increase, fluctuations occur in catches of individual species, with a declining total estimated Nile Perch catch. According to FAO FishStat data, catches averaged 135,000 MT per year over the period 2005-2008, of which 50,000 MT Nile Perch, 53,000 MT small pelagics, and 19,000 MT Tilapia. It should be noted that these figures differ significantly from figures of the main fish landings in Kenya provided by Marshall (2010) for the same period: 40,000 MT Nile Perch, 73,000 MT sardines, and 13,000 MT Tilapia.

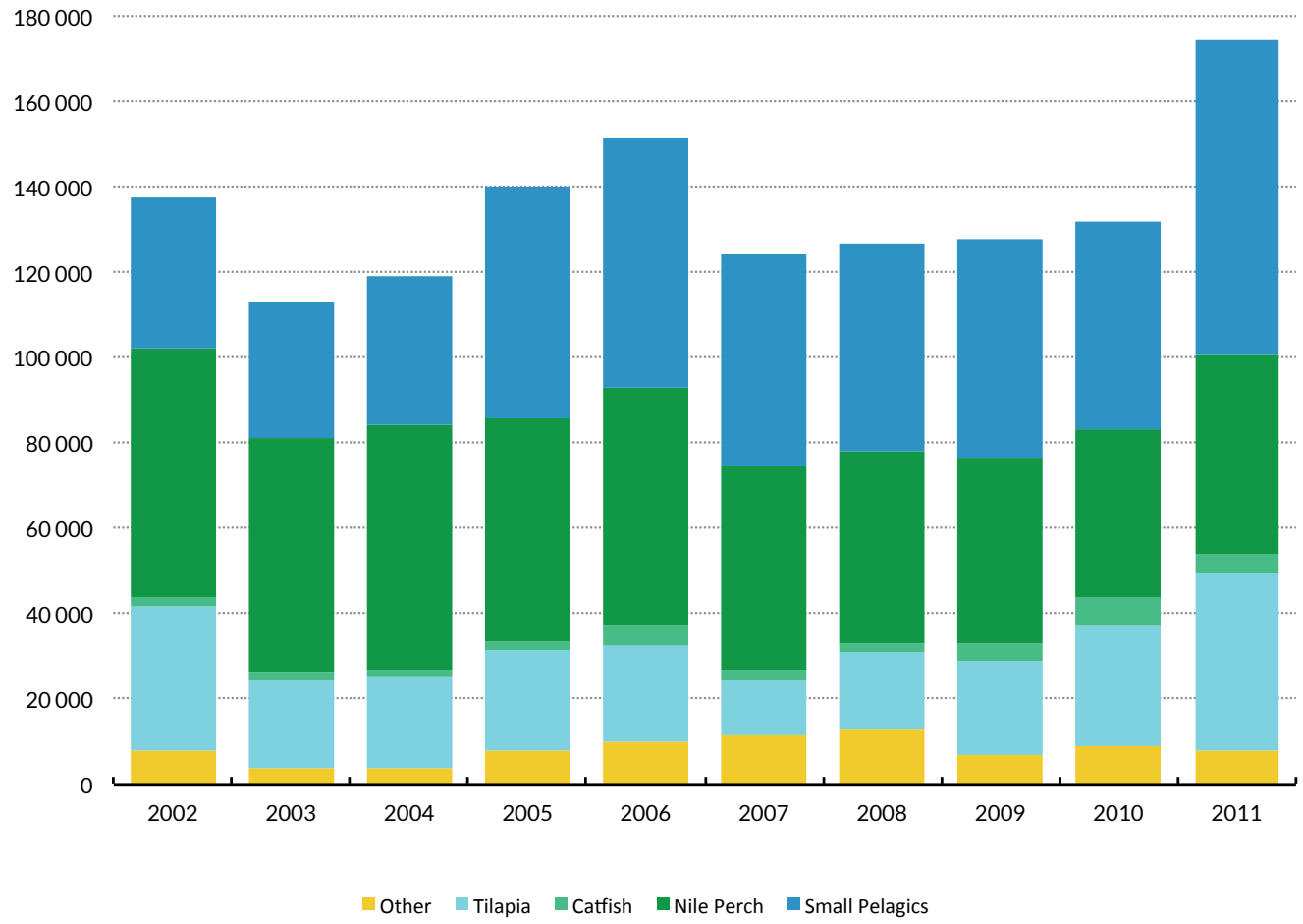
FAO estimates confirm that if the Nile Perch has been well reported as the main commercial species, as it has traditionally dominated the trade scene in the Lake Victoria fisheries, the situation would be changing with an increased share of small pelagics (Dagaa-like species) in the total fish production.

According to Anderson, 2011, Lake Victoria fisheries contribute an estimated 108,900 MT per year (approximately 88 percent) to Kenya's national fisheries production, with a value of US $150 million. During a recent IOC SmartFish workshop, held in Jinja (1st Joint Coordination Unit Meeting, LVFO), a presentation made by a Kenyan representative indicated that Lake Victoria fisheries accounted for about 111,619 MT in 2011 and 107,154 MT in 2012, i.e. about 85.5 percent of national production.

Current fish production from Lake Turkana is approximately 6,400 MT per year.

Domestic Inland fish production in Kenya (in tons)

2014 - Figure 7 - Source FAO FISHTAT J (2002-2011)



5.4. Fish Utilization

Kenyans consume over 70 percent of the domestic inland fisheries production. Nairobi is one of the main destinations for fish from Lake Victoria, Naivasha and even Tana River Dams. Other local markets include the Central and Eastern Provinces, who buy fish from fish farmers in the Tana River Dams. Some parts of the Rift Valley Province also receive fish from Lake Turkana, Naivasha and even Lake Victoria. The markets in other districts are fairly small (Otieno, 2011).

Tilapia is the main fish of choice, although more and more consumers are starting to consume dried sardines (Omena) and Nile Perch fillets. Various trends are driving fish consumption in the country including health, urbanization and the availability of fish in various forms in the markets. Fish consumption is still limited by cultural beliefs, with the highest consumption rates in the main fishery areas and the lowest consumption rates in the Central Province and pastoral communities in parts of the Rift Valley (Maina, 2011).

Sardine is the main freshwater fish species today in terms of production. It is also the main fish species targeted for regional markets such as Rwanda, Burundi and the Democratic Republic of Congo (DRC). Sardine is mainly processed (smoked, sun-dried and salted) and sold to traditional

markets targeting lower income consumers both in the urban and rural sectors. Physical losses, resulting from poor post-harvest methods, could be up to 7.5 percent.

The Tilapia value chain is fairly straight forward, with the fish being consumed fresh, whole or filleted. For food security reasons, Tilapia is not exported from Kenya.

In general, consumers prefer fresh, whole fish. Fillets are also becoming the preferred fish for high-income consumers. Fresh whole fish and the frozen, gutted or filleted, fish are drawn from Nile Perch and Tilapia with the domestic consumptions recorded at 50 percent and 100 percent respectively (Maina, 2011). Frozen fish fillets can also be found in supermarkets and are sold mostly to high-income consumers.

Other fisheries by-products, such as swim bladders, belly flaps, fish skins, fish frames and heads, and rejected fish are also sold for local consumption (Maina, 2011).

Through the Kenya Fish Processors and Exporters Association (AFIPEK), the industry has adopted a self-regulation programme aimed at limiting the processing of undersized fish in plants with a view to stopping the trade of undersized fish and contribute to the reduction of illegal fishing. Unfortunately, due to insufficient MCS at the production level, undersized fish continue to be caught and are traditionally processed for the regional export market.

Furthermore, due to poor fish handling, processing and sanitation facilities and a lack of potable water at most fish landing sites, the inland fishery sector is faced with serious health and safety issues on the domestic market.

5.5. Infrastructure

In 2010, 331 fish landing sites were registered on Lake Victoria, which represents an increase of 8 percent over the last 10 years (Frame Survey, 2010). However, only 12 beaches met the export trade requirements. Most of the beaches have no berthing facilities, vessels are either beached or moored just off the shoreline and the fish unloaded, for the most part, by hand and in most cases is loaded into containers for transportation without using the appropriate boxes (Maina, 2011).

During the EU ban on fish imports from the Lake Victoria region in the late 1990's, a Governmental Plan of Action was implemented to improve the quality of fish and fishery products from the lake. Part of this Plan of Action involved upgrading landing sites and beaches (e.g. improved reception areas, development of drainage systems and provision of insulated fish boxes). A limited number of landing sites were provided with electricity and water, landing jetties were built, fish reception facilities were completely modernized and access roads were improved. These developments are still ongoing through government funding or with the support of development partners. Fish processing establishments, through the AFIPEK, have also been involved in the provision of various infrastructures at some of the landing sites (Maina, 2011).

6. Aquaculture Sector

According to a recent IOC-SmartFish study (De San, 2012), current aquaculture production in Kenya ranges between 15,000 and 19,000 MT. The bulk of production is from semi-intensive farming in about 70,000 ponds (typically of 300 m^2). However, it is difficult to estimate the total tonnage because some producers are still in the expansion phase, others are in the consolidation phase and some have not yet finalized the process.

Although freshwater fish farming in rural Kenya has a relatively long history dating back to the 1920s, no spectacular progress has been achieved until 2007 where production was estimated at

around 1,000 MT per year. Since then, the number of farmers engaged in aquaculture has increased exponentially, mainly as a result of the introduction, in 2009, of the Economic Stimulus Programme (ESP N° 1) - of US $50.7 million - under which aquaculture was identified as a key pillar in the production sector.

According to De San (2012), fish aquaculture production could be estimated at around 15-19,000 MT in 2012 (90 percent Tilapia and 10 percent Catfish), thanks to the partial to full production of some of 48,000 ponds (300 m² each) given to individual farmers under the ESP N°1. It should be noted that successful operators have developed more ponds on their own in order to provide fish and income throughout the year: this explains the above figure of 70,000 ponds. The work of EPS N°1 was reinforced by EPS N° 2 with a financial cumulative effort estimated at around US $100 million. This massive national effort included feed and juveniles for the first production cycle; production systems are mostly semi-intensive. Semi-industrial farms have also emerged with companies aiming to rapidly increase their production to more than 1,000 MT per year (against a maximum of 100 MT per year) and to selling seeds and feed.

Fish (250 to 400 gr) produced by aquaculture are sold fresh, on ice or frozen on the national market. Polyculture farming, associating Tilapia and Clarias, is more often used for technical reasons (Clarias is used to regulate small Tilapia populations) than for marketing reasons since Catfish is not much appreciated by local consumers.

Seaweed farming has also recently emerged. Production was around 100 MT (dry) for 2012 with prospects of producing between 150 and 200 MT by 2015.

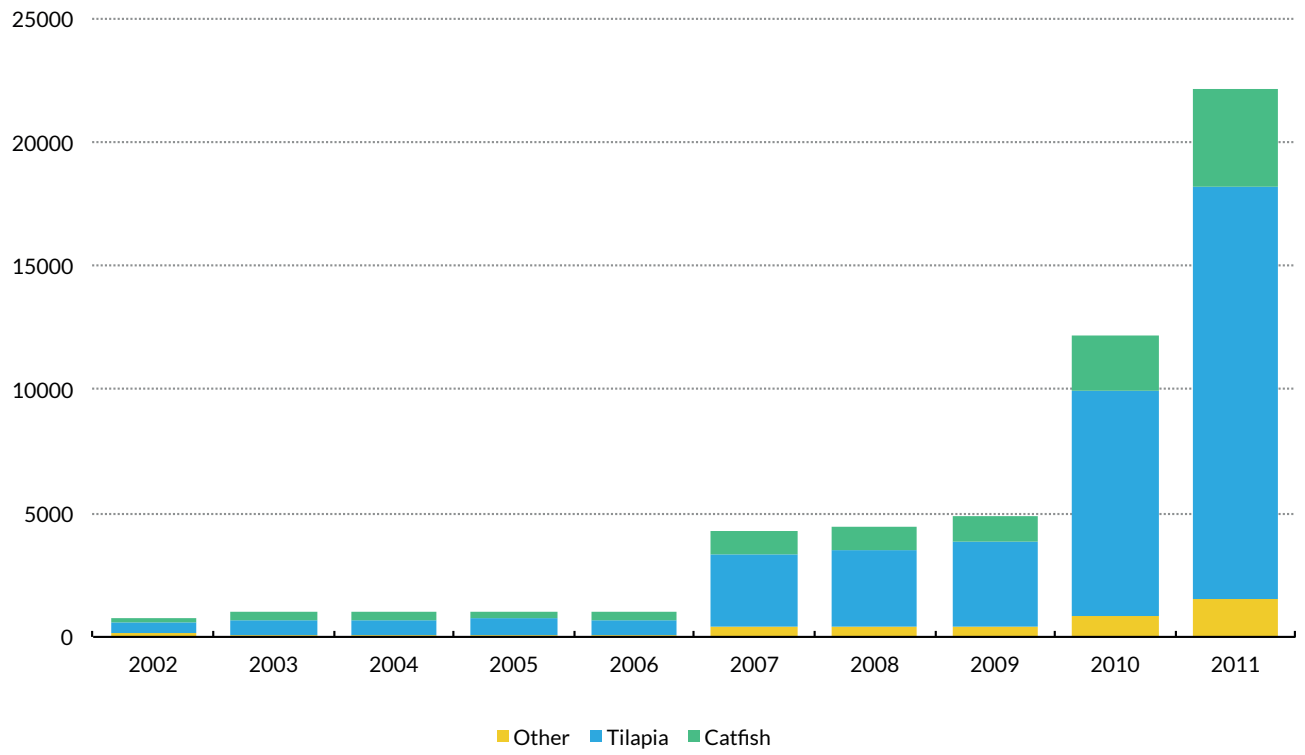
Furthermore, another recent study undertaken through IOC-SmartFish (*Spirulina – a livelihood and a business venture*), emphasized that "besides the natural growing areas around Africa favourable to spirulina growth, the main hub for spirulina production is Kenya, particularly in western Kenya around the Lake Victoria region". All spirulina in western Kenya is produced in open ponds made of polished cement or basins lined with thick, yellow, polyethylene plastic. Spirulina production is mainly for local markets for the ill and malnourished, although some of the production is aimed at more high-end users, which until now have also been restricted to within Kenya.

The principal aquaculture research and training centres for Tilapia are the Sagana Aquaculture Station and Moi University.

The most relevant documents relating to aquaculture policy and planning include: the National Aquaculture Policy, 2011; the Ministry of Fisheries Development Strategic Plan 2008 – 2012; and the Ministry of Fisheries Development National Aquaculture Strategy and Development Plan 2010 – 2015.

Fresh water Aquaculture production in Kenya (in tons)

2014 -Figure 8 - Source FAO FISHTAT J (2002-2011)



7. Fish Import and Export

Import

The import of fishery products for the Kenyan domestic market is actually very small (3,150 MT in 2010). It is essentially composed of frozen marine small pelagics (mackerels and sardines) originating from Asian countries, notably India, Pakistan, Korea and China.

A significant quantity of fishery products, considered as imports, comes from the DWFN tuna industry operating in the SWIO and offloading at the Port of Mombasa where fishery products are further processed for (re)export by local establishments. Export establishments also facilitate the transhipment of some unprocessed marine fishery products to European processing companies from foreign-flagged vessels (Maina, 2011).

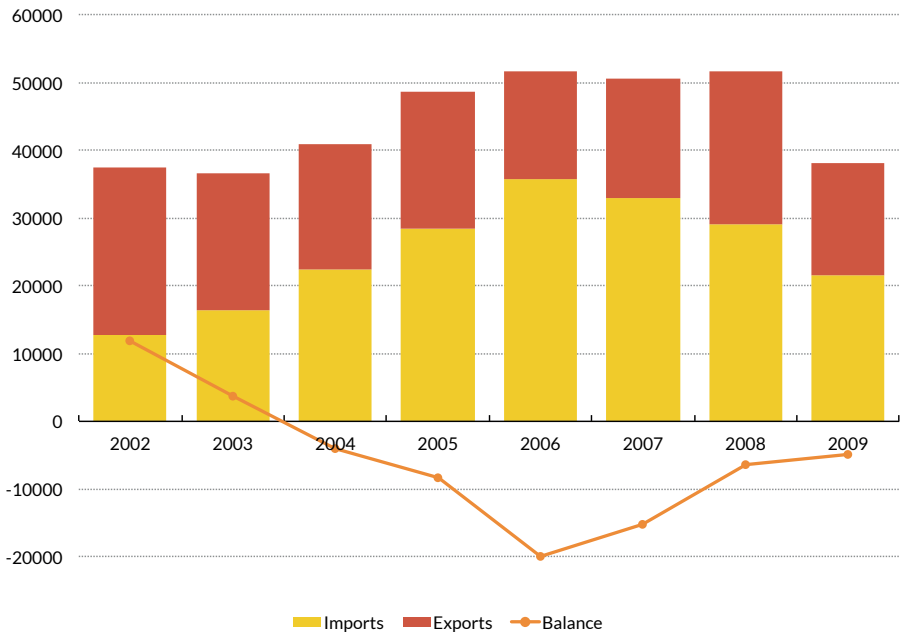
According to the EC Profile, 2011, the quantity of tuna landed and imported in the Port of Mombasa was approximately 10,000 MT in 2010. Three distinct categories could be distinguished: direct landings by purse-seiners (~1,300 MT), landings by reefers having received transhipments elsewhere in port or at sea (~3,700 MT), and imports of fish in freezer containers aboard container ships (~4,700 MT).

Export

Since the late 1980's, an important export market in frozen fillets has developed with the boom of the Nile Perch fishery on Lake Victoria. Products are exported to the EU, Israel, Japan, Malaysia,

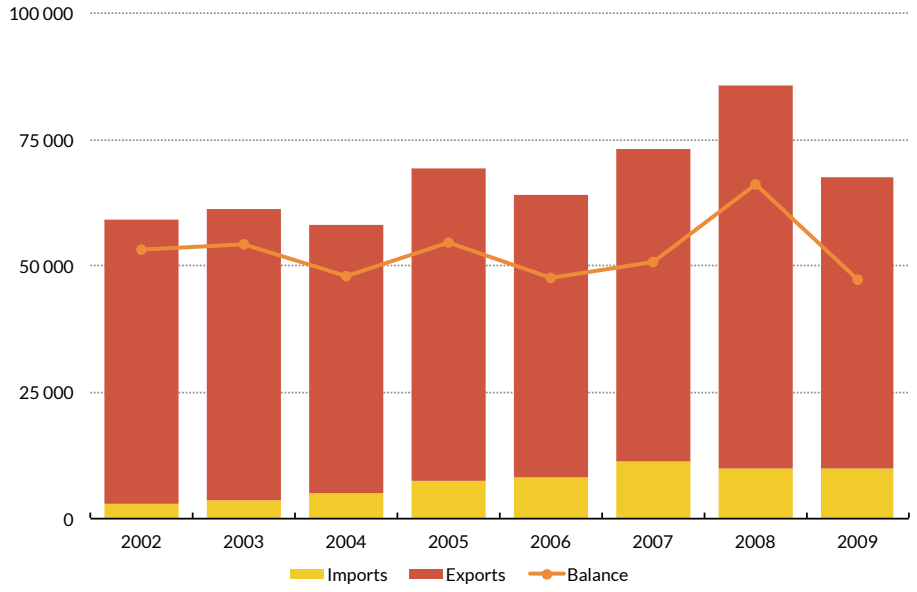
Fish trade balance in Kenya in volume (in tons)

2014 - Figure 9 - Source FAO FISHTAT J (2002-2009)



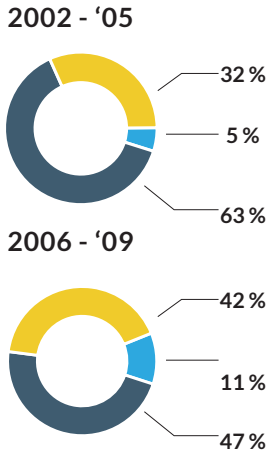
Fishtrade balance in Kenya in value (in '000 US $)

2014 - Figure 10 - Source FAO FISHTAT J (2002-2009)



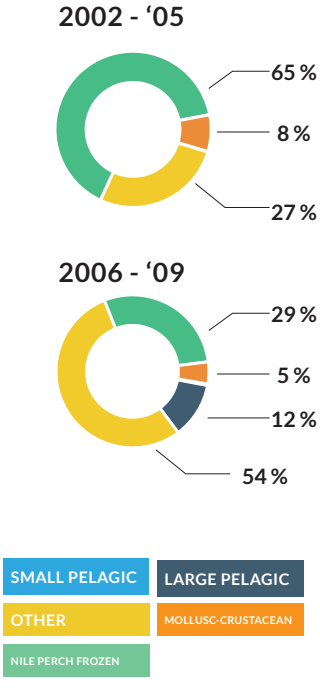
Fish Imports by category in Kenya in value (% of $)

2014 - Figure 11 - Source FAO FISHTAT J (2002-2009) - Average period



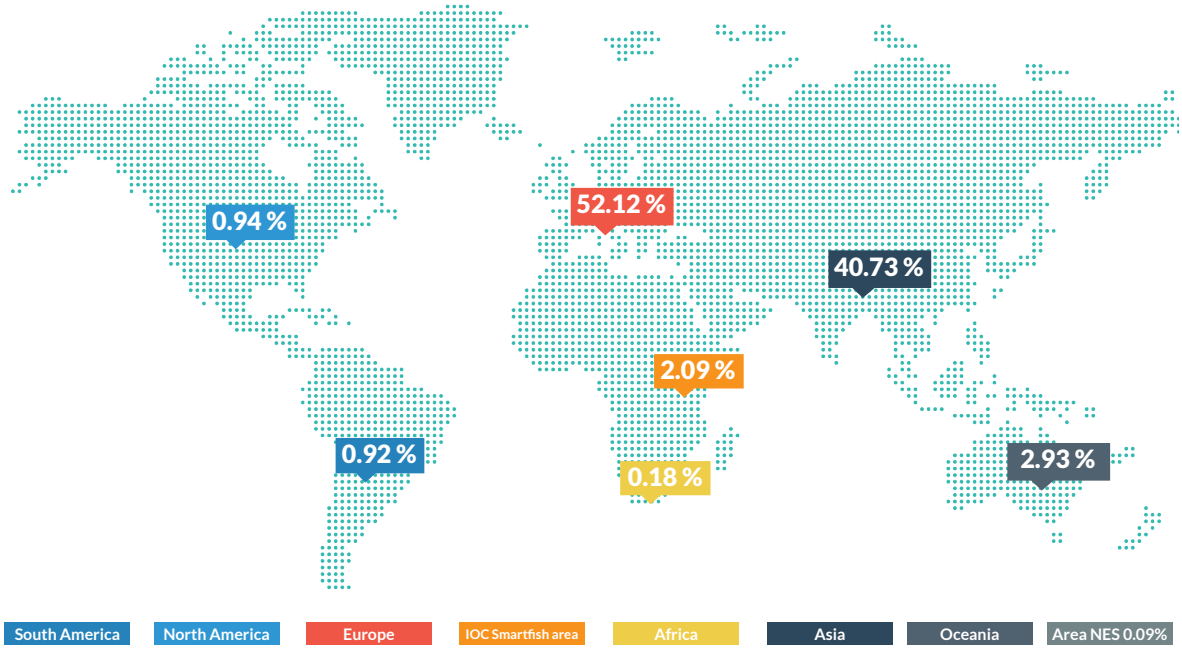
Fish Exports by category in Kenya in value (% of $)

2014 - Figure 12 - Source FAO FISHTAT J (2002-2009) - Average period



Destination of fish exports from Kenya (% of $)

*2014 - Figure 13 - Source UN comtrade (ref year 2010) - *NES : not elsewhere specified*



Australia, USA, Singapore and China. In the late 1990's, Kenya was confronted with EU bans for quality and safety reasons for the export of fish products from the lake, which had seriously affected the local economy. The last ban was lifted in 2000. According to official data, the overall share of Nile Perch has shown a decreasing trend in terms of value in fish exports.

The export of freshwater sardine (Omena) from Lake Victoria to several countries including Rwanda, Burundi and RDC, has been observed. A recent study on fish trade, commissioned through IOC-SmartFish (Kirema-Mukasa, 2012), confirmed that the contribution of small pelagics to regional trade is increasing due to increased awareness on the nutritional value of small fish, declining catches and an increase in population. In general, cross border trade in small pelagic fishes is informal and very little data is available. Tanzania is the biggest exporter of freshwater sardine in the region, followed by Uganda.

In the marine fishery sector, export products are supplied by semi-industrial shrimp trawlers, artisanal fishers (lobsters, molluscs and finfish) and DWFN vessels (mainly tuna). Artisanal fishers are supplied with ice and insulated containers by the export establishments. The export products from DWFN vessels are mainly composed of frozen tuna loins. Tuna loins in destination markets are used as raw material for the processing of products such as bottled tuna flakes, tuna salads, tuna pastes and spreads (Maina, 2011). The share of large pelagic fishery products represents about 85 percent in terms of volume and 75 percent in terms of value, of the total marine fishery products for export.

There are 17 to 18 industrial fish processing companies in Kenya engaged in export activities, mainly producing frozen or chilled fish including Nile Perch, prawns, lobsters, octopus, cuttlefish and squids (Otieno, 2011). The Tuna Strategy, 2012, also indicates that the country has a total processing capacity of over 1,200 MT per day.

Kenya fishery quality control conditions and procedures were harmonized with EU quality control

systems in 2004 (Mwikya, 2005). Today, 11 processing facilities are authorized to export fishery products to EU markets. Of these, five are located in Mombasa, four in Kisumu (Lake Victoria), one in Homa Bay (Lake Victoria) and one in Nairobi. AFIPEK ensure members adhere to the industry's Code of Practice.

In total, Kenya exported 16,500 MT of fish and fishery products (freshwater and marine included) in 2009, valued at approximately US $57 million. Traditionally, exports of Nile Perch fillets accounted for about 85 percent in terms of both volume and value until 2005. In 2009, Nile Perch fillets exports accounted for approximately 14.5 percent in terms of volume and 17.5 percent in value.

The significant increase of the share of the 'other' category in total exports in terms of value between 2002-2005 and 2006-2009 (see Figure 11 below) can be explained by a combination of factors including: a new fishery product - frozen fish flesh (Nile Perch and/or Tilapia), a reduction in the quantity of frozen Nile Perch fillets (by approximately 50 percent) and the emergence of a new category, 'large pelagics'. With regard the 'large pelagics' category, a more recent estimate indicated that about 10,000 MT per year of tuna loins are currently processed and transhipped in Mombasa to be (re)exported.

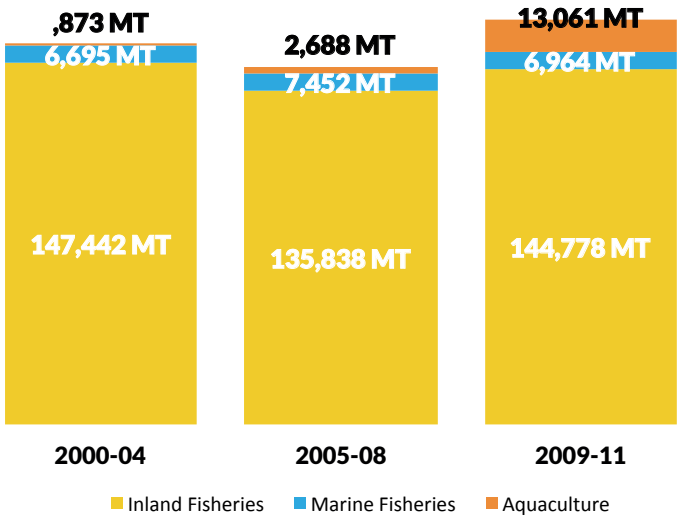
8. Contribution of the Fishery and Aquaculture Sector to the Economy

Total fish production in Kenya averaged 155,000 MT per year over the last decade, with significant inter-annual fluctuations of freshwater fish production (FAO FishStat). This figure, however, does not include any catches of tuna and tuna-like species by the DWFN fleet, which are unknown. The bulk of fish production in Kenya is performed by inland fisheries (around 90 percent of the total). Interestingly, the share of aquaculture in total production increased from approximately 1 percent in 2000-2004 to approximately 8 percent in 2009-2011.

According to the Fisheries Annual Statistical Bulletin 2010, the national production was an estimated 140,751 MT, worth approximately US $197 million. However, this value may be largely underestimated given that other specific studies indicate that the current production of freshwater

Total Domestic Fish production in volume in Kenya (fisheries and aquaculture) (in tons)

2014 - Figure 14 - Source FAO Fishtat J (2000 -2011)



sardines from Lake Victoria was valued at US $200 million in 2010 (Maina, 2011). It should also be noted that the contribution of the marine fishery sector to national production both in volume and value is relatively small. In 2009, a total of 7,926 MT of assorted fish species, valued at about US $7.2 million, were landed (Otieno, 2011).

In terms of its **contribution to GDP**, a survey carried out for the African countries estimated that the fishery sector accounted for 1.22 percent of GDP in 2011 (Kurien John, Lopez Rios Javier, 2013).

The contribution of the fishery sector to **budget revenue** is not available. As a matter of indication, the total annual licence fees for 33 purse-seiners, which were authorized to fish in Kenyan waters, may be close to US $1 million (current annual licence fees are US $30,000).

In terms of its **contribution to trade balance**, exports of fishery products represented 4 percent of food and agriculture exports in 2011 (Kurien John, Lopez Rios Javier, 2013). As a net exporter, the value of imports of fishery products in the same year was almost half the value of exports, and represented 1 percent of food and agriculture imports. Major trends with regard to the role of the fishery sector in the global trade balance indicate that the average share of fish in total exports has steadily decreased from 1.6 percent in 2000-2003 to 0.8 percent in 2008-2009.

With regard to the **contribution of the fishery sector to employment**, and although recent figures are not available, it is estimated that the total number of people employed in the commercial marine fishery sector is approximately 27,000, distributed between sea and shore-based activities (EC, 2011). Concerning inland fisheries, in 2010 there were about 41,900 fishermen only on Lake Victoria. Thus in total, the number of fishers engaged in commercial fishing activities may be close to 70,000.

In addition to these, it is estimated that there are another 60,000 people working in the marine fishery sector employed in ancillary industries or sectors, such as the market for the supply of stores, equipment and services (EC, 2011). Figures will no doubt be higher than this for the inland fishery sector.

Fish consumption was 3.4 kg per capita in 2009. This figure indicates a gradual slow-down of fish consumption in Kenya over the period 2000-2009 according to FAO estimates. National estimates for 2011 show an increase in consumption, estimated at 3.7 kg per capita. These indicators position Kenya in the lower end of fish consumers, although not amongst the countries with the lowest consumption rates (Kurien John, Lopez Rios Javier, 2013).

According to FAO estimates, fishery products accounted for 5.4 percent of total animal protein intake in 2009. This is nearly one quarter of the African average (19 percent).

Although it is not listed as the preferred source of animal protein, fish plays an important role in **food security in Kenya**, as indicated by Kurien and Lopez. Amongst the most important factors that would help improve the contribution of fisheries to food security are: the sustainable exploitation of resources; the development of moderately exploited marine fisheries further off-shore; the development of aquaculture; an increase in the awareness on the potential of fisheries to contribute to food security; and training and capacity building along the value chain. It should also be noted that the marine fishers rely on their catch to provide food for their own consumption in most of the fisheries (WIOFISH, 2012).

Little information is available on **gender issues in fisheries.** Women are mostly engaged in fish processing and marketing activities. For instance, the 2012 WIOFISH Annual Report indicates that women participate in fishing activities of only 6 of the 31 recorded operational fisheries.

Fish consumption in Kenya (in live weight)

2014 - Figure 15 - Source FAO Fish and fishery product, world apparent consumption FAO STAT (2000 - 2009)

	Total fish supply quantity	Fish supply per capita	Fish protein per capita
2008 - 09	132,784 MT	3.45 kg/y	0.95 g/day
2004 - 07	128,520 MT	3.55 kg/y	1.05 g/day
2000 - 03	127,300 MT	3.95 kg/y	1.175 g/day

POLICY, INSTITUTIONAL AND LEGAL FRAMEWORK OF RELEVANCE FOR THE FISHERY SECTOR

9. Fishery Policy and Planning

The National Oceans and Fisheries Policy (NOFP), 2008, is the current policy document in use in Kenya. The policy provides a coordinated framework to address the challenges facing the fisheries sector and guides the sustainable development of fisheries in line with the Economic Recovery Strategy (ERS), the Strategy for Revitalizing Agriculture (SRA) and the National Vision 2030. In particular, it calls for further collaboration and cooperation in the management of migratory and shared stock, for the promotion of specific fishery management plans and for improved MCS.

The overall objective of the NOFP, 2008, is to "enhance the oceans and fisheries sector's contribution to wealth creation, increased employment for youth and women, food security and revenue generation through effective private, public and community partnerships." Specific objectives include: promoting the conservation and management of fisheries resources; maximizing employment; maximizing revenue from fisheries and related activities; promoting an integrated economy; enhancing food supply and food security; promoting safety at sea; developing aquaculture; promoting recreational and ornamental fisheries; and improving legal and institutional framework for ocean exploration and development.

A strategic document entitled "Tuna Fisheries Management and Development Strategy 2013-2017" was recently developed in close collaboration with the national industry and NGOs. The strategic objectives of this strategy are: to maintain the productive capacities of tuna stocks at sustainable levels and minimize negative fishing impacts on marine fisheries ecosystems; to transform tuna fisheries from artisanal fisheries to modern commercially oriented coastal and oceanic fisheries; and to enhance effective tuna fisheries governance that takes into account national, regional and international requirements. In particular, this strategy encourages the use of preferential licensing to provide incentives for increased landings from the DWFN fleet.

A draft National Aquaculture Policy was prepared in May 2011 with the assistance of the ACP Fish II project. This policy aims to consolidate the legal, technical, administrative and crosscutting issues that are contained in several policies and planning documents. Guiding principles of this policy include, inter alia, good governance, food security, entrepreneurship, public-private partnership and environmental sustainability. One of the specific objectives of this policy is to create a private sector driven Aquaculture Advisory and Research Board (AARB) to provide advice in support of aquaculture development.

10. Institutional Framework

The key fishery responsibilities fall under the Ministry of Fisheries Development (MoFD), created in 2008. The Department of Fisheries (FiD) is the lead agency responsible for fisheries management and the development of all national fisheries, including issuing fishing licences, assuming overall responsibility for MCS, and undertaking research in marine and fresh water fisheries. It should be noted that the FiD is also responsible for issuing and verifying catch certificates under EU-IUU Regulations. Other institutions, belonging to other departments, intervene in the governance of the fisheries notably with regard to the registration of vessels and MCS.

10.1. Fisheries Administration

The FiD is mandated, under the Fisheries Act Cap 378, with the development, management, exploitation, utilization, and conservation of Kenyan fisheries resources. The FiD is sectioned into four directorates based in Nairobi: Inland and riverine fisheries; Marine and coastal fisheries; Aquaculture; and Fish quality assurance and marketing. Operations are based in the field, with a district office in each district supervised by a District Fisheries Officer (DFO). The DFO report to Nairobi and have little autonomy. The main station for Lake Victoria is located in Kisumu. For the marine sector, the main station is based in Mombasa.

An important transition is taking place in government: devolution in the governance structures from 'Provinces' (with districts and regions managed under each province), to 'Counties'. Furthermore, this new county system of fisheries governance and management has already been incorporated in several new Bills that are in the process of review by Kenya's parliament, including the fisheries management Bill, 2011 (see below).

This shift from a provincial to a county system will undoubtedly have a considerable impact on governance structures, in particular the devolution of authority (and governance) and the need to enhance capacity to undertake fundamental fisheries management activities. In the new county structure, offshore fisheries would remain the responsibility of the MoFD (Nairobi) and counties will be responsible for fisheries in territorial waters. Fisheries management capacity is today limited and may be even more limited when the county system is introduced (Japp, 2011).

Furthermore, the government has undertaken to create a new framework through the establishment of the Kenya Oceans and Fisheries Council to be chaired by the Minister. It will advise on the oceans and fisheries sector, and will comprise over twenty government agencies. The creation of this Council has been addressed in the Fisheries Bill, 2011. It is envisioned that common issues will be addressed through working groups and committees created at different levels, including reviewing and advising the Cabinet Secretary on the allocation of access to fishery resources.

A Kenya Oceans and Fisheries Service, is also under creation. The mandate of this Service would be to harmonize fisheries extension, development, management and marketing. It will seek the collaboration of all relevant parties and stakeholders to ensure clear and legitimate decision-making. The government will put in place a well-defined delimitation of functions and responsibilities between and amongst different agencies, Departments and Ministries operating within the sector.

10.2. Fisheries Research and Training

The main fisheries research institution is the Kenya Marine and Fisheries Research Institute (KMFRI). The KMFRI was established in 1979 by the Science and Technology Act, Cap 250 of the Laws of Kenya, to conduct research on marine and freshwater fisheries, aquatic biology, aquaculture, environmental chemistry, ecological, geological and hydrological studies, as well as chemical and physical oceanography. The KMFRI is run by a Board of Management.

The KMFRI remains semi-autonomous and is contracted through the MoD or other independent groups (such as NGOs) to undertake fisheries research. The KMFRI appears to have no direct responsibility for fisheries other than in a research and advisory capacity. The FiD has a research section that coordinates fisheries research and carries out simple applied fisheries research and surveys with various partners. Moi and Nairobi Universities also collaborate with the FiD to conduct fisheries research, especially aquaculture.

Some major regional and national projects relevant to marine fisheries are housed at the KMFRI, including the former South West Indian Ocean Fisheries Project (SWIOFP) and the Kenya Coastal Development Project (KCDP), which aims to promote environmentally sustainable development along the coast. Many of the programmes and research initiatives conducted by the KMFRI,

however are not often applied. In many ways this is a governance issue as there are no definite and structured protocols of engagement between researchers and fisheries managers (Japp, 2011). Furthermore, due to financial constraints, research programmes are limited and can barely address fisheries management and development issues.

With regards to training, Moi University and Nairobi University have included fisheries in their undergraduate curricula (FAO 2007-2015). Moi University has a Department of Fisheries, which trains fisheries graduates. Four local universities and a number of international universities provide training to fisheries experts at postgraduate levels (Masters and PhD).

The Ministry of Education has also included fish farming and general fisheries in primary and secondary school curricula..

10.3. Other Public Institutions concerned by Fisheries

The **Kenya Maritime Authority (KMA)** is mandated under KMA Act 2006 to regulate, co-ordinate and oversee maritime affairs in Kenya. The KMA is responsible for the registration and flagging of all vessels including fishing vessels. It also contributes to the protection of the environment and safety at sea. The KMA has powers to regulate the exploration, exploitation, conservation and management of maritime zones.

The **Kenya Ports Authority (KPA)** is a statutory body established by an Act of Parliament Cap 391, 1978. The KPA is responsible for the management of port operations. It ensures, amongst other things, that there is safe navigation and controls pollution of the coastal waters. It functions as a service provider for the shipping industry.

With regards to MCS, two institutions are involved: the **Kenya Navy** and the **Marine Police**. The primary roles of the Kenya Navy include the policing of Kenya's territorial waters, protection of vital areas and surveillance of the EEZ. Recently, the Kenyan Navy has been involved in ensuring security along Kenya's coastal waters and the border with Somalia, greatly affecting fishing activities. The Marine Police provide assistance in maintaining security, and law and order along the marine waters.

The **Coast Development Authority (CDA)** is an authority established by an Act of Parliament Cap 449, 1990. The CDA is mandated to plan and coordinate the implementation of integrated development projects in coastal areas. The CDA is also involved in activities such as the construction of fishponds. It also supports artisanal fishermen through the establishment of microcredit and savings schemes to enable them to acquire capital to purchase better and/or improved fishing gears (Maina, 2011).

The **National Environmental Management Authority (NEMA)** is a parastatal institution established to oversee the implementation of the Environmental Management and Coordination Act (EMCA), 1999. Its mandate is to ensure environmental compliance and enforcement and to undertake public awareness and education campaigns, amongst others. NEMA has been at the forefront of the development of Integrated Coastal Zone Management (ICZM) action plans and other policies, guidelines and programmes relevant to the coastal and marine environment (Maina, 2011).

10.4. Private and Community-Based Institutions

The **Kenya Fish Processors and Exporters Association (AFIPEK)** represents the interests of the processors and exporters established in Kenya. AFIPEK has traditionally been closely associated with Nile Perch and lake fisheries interests, but has been shifting attention towards marine fisheries in recent times. AFIPEK is also actively participating in dialogue with the fisheries administration for improved management of inland and marine fisheries.

The **Tuna Fisheries Alliance of Kenya (TUFAK)** is a recent forum whose mandate is to enable the active involvement of civil society in public policies relating to the management of tuna fisheries in Kenya and the development of a domestic tuna fleet.

The **Kenya Private Sector Alliance (KEPSA)** is a forum that defends the interests of post-harvest actors, particularly in terms of marketing and the transportation of the freshwater fish to domestic and export markets.

Another category of private institution encompasses the **Beach Management Units (MBUs)**. BMUs are the backbone of fisheries co-management in Kenya, led by the Fisheries Department. The Fisheries (BMUs) Regulation, 2007 (Legal Notice 402) provides the necessary legal framework for the BMUs to operate. The regulations outline the objectives of the BMUs, their administrative structure, area of jurisdiction and co-management mandate. They promote co-operation amongst fishermen and their participation in the overall management of fisheries resources and landing areas, as is provided for in the Fisheries Act CAP 378, 1991 and its subsidiary legislations. Fishermen are given co-management rights, enshrined in by-laws, which must be approved by the Director of Fisheries.

The promotion of BMUs will work in parallel with the overall decentralisation process in the country. The devolution of responsibilities (and rights) to districts and ultimately to communities through the BMUs has many advantages However, it is evident that the performance of decentralisation has so far been sub-optimal due to two inter-related reasons: the lack of financial resources and a shortage of human capacity (Anderson, 2011).

BMUS were first developed on Lake Victoria following a fisheries co-management initiative established from the late 1990's. Co-management in Kenya is a concept that was started with the purpose of shifting management from government institutions to a decentralized style in which stakeholders are involved in decision-making. The BMU regulation is an important governance instrument as it is a bottom-up approach embracing communities and all stakeholders who effectively become the stewards of the resources they exploit and are, therefore, involved in the governance of fisheries (Japp, 2011).

Today, there are 266 BMUs registered for the lake shoreline (Fisheries Management and Development Bill, 2011). BMUs have a role in monitoring and controlling practices such as environmental damage, cross border conflicts and illegal or damaging gear. They also carry out registration procedures for boat owners and fishers and implement by-laws. However, BMUs need, further substantial support if they are to successfully implement their role as envisaged by the fisheries legislation (Anderson, 2011).

In the coastal marine fisheries, about 73 BMUs have been formed since their introduction in 2006. The BMU concept falls within a broader concept of Locally Managed Marine Areas (LMMAs) where the process of implementing an LMMA involves the participation of NGOs with government performing the overall institutional management role. However, these initiatives are not without their problems and challenges, and the FiD is keen to ensure that they are developed in a coherent and systematic way (Japp, 2011). Samoilys et al., 2008, in studying the perceptions of stakeholders in the villages based in Kiunga Marine National Reserve (KMNR), noted that the community still perceives the BMUs as being another arm of government administration, and as such they are suspicious. An evaluation of BMUs in the Kenyan coastal marine fisheries has been undertaken by IOC-SmartFish (2013).

10.5. Budget and Funding Mechanisms in support of Development and Management

Very little information on the current budget of the fisheries administration is available.

Some indications are given in the EC CP, 2011, for the marine fishery sector. It is stated "the national budget for marine fisheries for the fiscal period 2010-2011 – including staff – is 350,000,000 KSh (the equivalent of €350,000), and is all but limiting. The Fisheries Department aims to quadruple its budget to 1,400,000,000 KSh in 2012, aiming for a 3.6 billion marine fisheries budget in 2014."

11. Legal Framework

The principle fisheries legislation in Kenya is the Fisheries Act (Cap 378), Laws of Kenya of 1989 (revised in 1991), which regulates marine and inland fisheries, as well as aquaculture. There are various other pieces of subsidiary legislation, including the Fisheries (general) (amendment) Regulations, 2001, which cover both marine and inland fisheries, and the Fisheries (Foreign Fishing Craft) Regulations, 2009.

Other laws influencing the governance of the fisheries include the Maritime Act (Cap 250), the Wildlife (Conservation and Management) Act (Cap 376) and the Merchant Shipping Act (2009).

Kenya is also a party to the 1982 UN Convention and the 1995 UN Fish Stocks Agreement and has signed the FAO Port State Measures Agreement.

11.1. Fisheries Legislation

The Fisheries Act (Cap 378) pre-dates all major international agreements relating to fisheries, except UNCLOS, and needs to be updated and adjusted in light of regional and international obligations.

The Government of Kenya took initial steps to prepare a draft Fisheries Management Bill in 2010, but due to a revision of the Constitution it was necessary to revise this Bill in 2011. The revision was done with the assistance of an IOC-SmartFish international consultant (Swann, 2011). The draft Bill, 2011, is significantly more comprehensive and incorporates provisions of relevant international instruments, including the PSMR, and regional fisheries management organizations (notably the LVFO and the IOTC), as well as best practices of fisheries laws. The IOC-SmartFish consultant also formulated a certain number of recommendations.

Prior to a national workshop on fisheries licensing in Kenya, organized by IOC-SmartFish in November 2012 (Breuil and Snijman, 2012), the degree to which the Bill incorporates the implementation of the international and regional legal framework was examined. The requirements of the various regional and international instruments that deal with registration and licensing, including UNCLOS, CCRF, IPOA-IUU and IOTC, were examined to see whether these requirements have been dealt with in the Bill. Indeed, it was clear from the evaluation that the current Bill makes extensive provision for the incorporation of regional and international measures and accommodates the implementation of such.

11.2. Other Elements in relation to Legal Aspects

Participation in Regional Fishery Bodies

Kenya is a member of the Indian Ocean Tuna Commission (IOTC), the Southwest Indian Ocean Fisheries Commission (SWIOFC), the Committee for Inland Fisheries and Aquaculture of Africa (CIFA), and the Lake Victoria Fisheries Organization (LVFO).

The IOTC is an intergovernmental organization mandated to manage tuna and tuna-like species in the Indian Ocean and adjacent seas. Its objective is to promote cooperation among its members with a view to ensuring, through appropriate management, the conservation and optimum utilization of stocks and encouraging the sustainable development of fisheries based on such stocks. The

IOTC was established by an Agreement under Article XIV of the FAO Constitution in 1993. The Agreement entered into force on 27 March 1996. Under Article XIV of the FAO Constitution, bodies established by such agreements may have full management powers.

The SWIOFC was established in 2004 by a Resolution of the FAO Council as an Article VI FAO Regional Fishery Body. SWIOFC is an advisory body with a mandate to promote the sustainable development and utilization of coastal fishery resources off the shores of East Africa and several island States of the region, as well as the responsible management and regional cooperation on fisheries policy. The SWIOFC does not have a mandate in relation to areas beyond national jurisdiction.

The CIFA was established by the FAO Council in 1971 as an Article VI FAO Regional Fishery Body. CIFFA is an advisory body with a mandate to promote the development of inland fisheries and aquaculture in Africa.

The LVFO was established by a Convention signed on 30 June 1994 by Kenya, Tanzania and Uganda sharing Lake Victoria. The LVFO is registered under Article 102 of the United Nations Charter and recognized as a Regional Fisheries Management Organization (RFMO). The Organization is an institution of the East African Community (EAC). Its objectives are to foster cooperation among the contracting parties, harmonize national measures for the sustainable utilization of the living resources of Lake Victoria and to develop and adopt conservation and management measures. Amongst other things, the LVFO aims to promote the proper management and optimum utilization of the fisheries and other resources of the Lake and enhance capacity building of existing institutions and develop additional institutions dedicated to, or likely to contribute to, the purposes of the Convention in cooperation with existing institutions established in or by the Contracting Parties and with such international, regional or non-governmental organizations. Member States of the LVFO are bound by agreements reached by the LVFO Council of Ministers (Snijman, 2011).

Fishing Agreement

Currently, there are no fishing agreements in Kenya. However, Kenya will examine the possibility of developing a Fisheries Partnership Agreement (FPA) with the EU for tuna. This would obviously improve the governance of the DWFN tuna fleet, notably with regard to fishing licences, which are issued individually to a number of independent companies, as well as MCS.

FOCUS ON FISHERIES MANAGEMENT AND RELATED ISSUES IN THE MARINE SECTOR

12. Administrative Functions

Fleet registration and management

Registration of fishing vessels in Kenya, whether artisanal or industrial is regulated via the Merchant Shipping Act, 2009, which is administered by the KMA.

According to the Merchant Shipping Act, artisanal canoes should be licensed, but the process of licensing this fleet is yet to be implemented. As stated by Anderson, 2011, "the main problem with the licensing regime on the coast is that there are a large numbers of vessels (and presumably fishers) whose licence number is not easily known. More than 75 percent of the vessels recorded in the 2008 Frame Survey were not recorded with their registration number. The Act indicates that a Register of all vessels should be kept by the Department but the extent to which this is currently adhered to is unclear."

The KMA is currently developing an initiative aimed at ensuring the registration of all canoes for security reasons including piracy. It should be noted that under the Fisheries Bill, BMUs also have a responsibility to maintain a register of vessels (and fishing gears).

The situation of vessel registration in the industrial sector is relatively satisfactory and the Merchant Shipping Act includes most of the provisions derived from international obligations. The link between fishing authorisation and registration of a fishing vessel is however not always evident when examining existing texts and policy documents. In the Merchant Shipping Act, the procedure for licensing a vessel "used or intended to be used" for fishing does not require a prospective fishing licence. In this regard, a recent report (EC, 2011) also remarked that "coordination and collaboration between fisheries, the KMA and KPA are deemed to be largely insufficient". The coordination and collaboration between fisheries and the KMA have however improved since (Breuil and Snijman, 2012).

Authorizations to fish

In the Fisheries Act Section 9(1), "No person shall fish in Kenya fishery waters unless he is a holder of a valid fishing licence, he is an employee of a licensee or he is fishing for his own consumption." Many artisanal fishermen however, lack licences. Moreover, many fishermen are not BMU members making enforcement difficult (Maina, 2011).

Artisanal fisheries on the coast fall under an open-access regime and access to a licence simply requires the completion of an application form. For the bulk of the domestic fleet, fishing licensing can therefore be considered as a purely administrative act. Anderson, 2011, further specifies that licences are not an effort to control but simply a source of revenue (albeit minor) for District Councils (soon to be Counties).

In the industrial fishery sector, the system of fishing licences is applied in accordance with existing texts. The current procedure places the responsibility for the licensing of local semi-industrial vessels on the provincial office in Mombasa. The licensing of foreign vessels is the responsibility of the MoFD in Nairobi. In both cases, applications are examined by licensing evaluation committees before being considered by the MoFD; the provincial office comments and makes recommendations to the MoFD in Nairobi on the issuance of licences. It is not clear whether this procedure will be maintained under the new legal dispensation, as the concept of licensing committees is not formally incorporated in the Bill.

Meanwhile, Kenya is facing a challenge with regards to DWFN fleets resulting from the fact that licensing is undertaken at the MoFD in Nairobi, whereas the MCS function is performed by officers based in Mombasa. The result of this arrangement is that licences are issued before full MCS compliance has been obtained for a particular vessel or company (Anderson, 2011).

A review on the Fisheries Bill, with regard to fisheries licensing and good governance in Kenya, was recently undertaken by IOC-SmartFish consultants. One of the major findings was that the Bill does not provide for a combination of a long-term authorization to fish and uses the annual licence as a management tool, which may hamper the development of a domestic fleet. The DFWFN fleet requires a fishing licence. In addition, the Bill provides for fishery access agreements that may be agreed for more than one year, subject to annual renewal. Such agreements could therefore fulfil the role of long-term authorizations for the DWFN fleet.

Finally, it should be stressed that the current fisheries policy in Kenya (2008) emphasizes the need to change the current licensing regime, which is mostly of an administrative nature today, to a regime where licensing would become an important tool to support fisheries management.

Fish quality

The Competent Authority in Kenya is the Fisheries Department (FiD). The mandate of the Competent Authority is to inspect and ensure the safety of fish and fisheries products sold within Kenya and for export to the EU market (Legal Notice no. 170). It is currently operating under the Fisheries (safety of fish, fish products and fish feed) Regulations, 2007. A standing committee and a technical committee are established for management purposes. Inspections are undertaken by gazetted fish inspectors who are responsible for inspecting fish production areas, fish handling operations and certification.

13. Fisheries Monitoring

Kenya is conducting regular frame surveys to monitor artisanal fisheries: the last one was conducted in 2012. Frame surveys attempt to capture data for all types of fishing gears, including those that are technically illegal (such as spear guns).

Coastal catch assessment surveys are also undertaken by the MoFD. Until 2010, the data collection system was based on total enumeration from all landing sites, which proved to be difficult to manage and sustain due to human and financial limitations. Since then, the fisheries administration has introduced a new data collection programme based on a modified sampling programme.

According to Anderson (2011), a new Access database is in the advance stages of development, with a web-based interface to be accessed at District Fisheries Offices through an Internet connection, with the database itself being housed on a server in Mombasa.

BMUs are expected to play an important part in recording marine artisanal landings at the beach/community level. However, due to the youth of such institutions and some governance problems in relation to the taxation system associated with data collection, statistics collected by BMUs are not very reliable.

Furthermore, according to the WIOFISH Annual Report, 2012, the catches from 27 'fisheries' are recorded at the landing sites but these catches are not attributed to any particular fishery when entered in the fisheries statistics database.

In the industrial sector, a distinction has to be made between the DWFN and domestic fleets. For the DWFN tuna fisheries, licensed vessels are required to provide a standardised set of data to the

MoFD on entry to and exit from the Kenyan EEZ. Data on catches taken within the Kenyan EEZ are recorded by vessels on a standard IOTC form and reported back to Kenya via the vessels' agents and the IOTC (Anderson, 2011). Electronic summaries are required to be sent by email through the VMS. However, the operational system is very weak and there is no database at the MoFD level to enter data directly from the logbooks or the summaries. This explains the lack of data on the activities of foreign fishing fleets, including data on catch, by-catch, possible transhipment, and notification of entry/exit of the EEZ in relation to Port State measures statistics: hence the impossibility for Kenya to monitor the current performance of the tuna fishery in its EEZ. This could become a sensitive issue if national quotas become the favoured management approach in the IOTC region.

The monitoring of domestic (shrimp trawlers) fishing is mainly based on the fishing logbooks. There is, however, no database to manage the data from the logbooks. The recently adopted Prawn FMP (see below) should significantly improve the situation in terms of the monitoring of the fisheries. The FMP requires the installation of a VMS on vessels and it also requires that an observer be placed on board the trawlers. Data collected by observers is expected to be compared with data reported through the VMS and the logbooks.

Some progress towards the improved data collection of industrial fisheries has been made recently. In particular this includes the setting-up of collaborative mechanisms among institutions for information sharing through the establishment of an Inter-ministerial Committee on Ocean and Fisheries. The improvement of the MCS system in the EEZ (see below) should also be mentioned, even if the establishment of an effective system of observers on board foreign fishing vessels would significantly improve the situation. Finally, it is believed that shipping agents and local partners (in view of a joint venture or chartering agreement) could play a greater role in data and information collection with respect to the activities of foreign vessels and it might be necessary to be more explicit in the Bill in terms of their obligations to provide relevant and accurate related information.

14. Fisheries Management Systems

Marine fishery resources are managed by the Department of Fisheries through the Fisheries Act (378) and its subsidiary regulations and the Fisheries Policy (2008). With the exception of the semi-industrial component of the prawn fisheries, all the fisheries fall under an open access regime in the sense that licences are required but there are no restrictions on who can apply for one. For the bulk of the domestic fleet, the licensing process is deemed a purely administrative act. As mentioned above, the current fisheries policy emphasizes the need to change the current licensing regime so that it becomes an effective tool to support fisheries management.

Technical fisheries management measures include zoning, fishing seasons and restrictions on the type of gear to be used and the minimum size of species. The fisheries legislation also considers the illegal use of certain nets or under-sized mesh, beach seines, spear guns and dynamite fishing. It also protects coral reef fisheries away from protected areas and fish breeding areas.

Furthermore, MPAs were established under the Wildlife Management Act. The development of MPAs is the responsibility of the Kenya Wildlife Services which has poor collaborative linkages with the fisheries administration. There are six marine reserves and five marine parks located along the coast. In some marine reserves, limited harvesting is allowed whilst in others, fishing activities are not.

Some fisheries use rotational harvesting strategies to provide recovery time for habitats, and traditional restrictions are also in place for some of the subsistence and artisanal fisheries (WIOFISH, 2012).

The only FMP in place is the Prawn FMP which was adopted in March 2011, namely the Kenya Gazette Supplement No. 13 (Legislative Supplement No. 10). The specific objectives of the FMP are to inter alia: regulate prawn harvesting through control of the fishing effort (including a restriction on the semi-industrial component of the fishery); minimize the overall amount of by-catch in the prawn fishery; minimize resource user conflicts in the prawn fishery; and promote the use of better prawn harvesting technologies for prawn fishing. To ensure an equitable sharing of benefits, the plan recognises the need to empower local people in both the artisanal and semi-industrial components of the fishery. The plan also recommends the establishment of a Community Trust Fund whose benefits are distributed through the BMUs.

Two other FMPs are currently being prepared: the ring net FMP and the Lobster for Lamu District FMP. The preparation of the ring net FMP was triggered by the many socio-economic issues and conflicts arising from the fisheries. In particular, the specific objectives of the FMP include the need to regulate the harvesting of pelagic fishes and incorporate the key principles of the eco-systemic approach to fisheries. The final version of the ring net FMP was prepared in 2012 and is currently under approval. The second FMP (Lobster for Lamu District) has been promoted since 2009. The broad objective of this plan is to ensure the biological sustainability and economic viability of this fishery. The preparation of this plan is guided by the Marine Stewardship Certification (MSC) standards.

In order to overcome constraints resulting from the current weak management of coastal fisheries, Kenya has put in place community-based fisheries management mechanisms through the BMUs. As mentioned above, the BMUs have a mandate under the law to manage certain aspects of the fishery with the authorities, including developing their own by-laws provided they are consistent with fisheries regulations. The effectiveness of BMUs in the management of the coastal fisheries however, is still questionable.

The management of tuna and tuna-like species falls under the overall responsibility of the IOTC. In Kenya, as mentioned above, the current governance of the tuna fisheries mostly consists of capitalizing on the licensing fees paid by DWFN fleets: currently there is inadequate capacity for monitoring their activities.

15. Fisheries Control, Surveillance and Enforcement

A recent study on the state of MCS in Kenya found that there are limited monitoring and control measures in marine fisheries (Berg, 2011). The study highlights that indicators with regard to institutional capacity showed gaps in many aspects of MCS, notably concerning the lack of a cross checking system to verify catch and landing data, limited MCS intelligence information gathering, poor internal communication and limited inter-agency cooperation and information sharing. Other relevant constraints include the fact that sea-patrols, with the assistance of the Navy, are relatively few and far between due to budgetary constraints, VMS (TRANSAS system) is only partially functioning due to technical difficulties, the provision of on-board observers is poorly implemented and there is a lack of MCS staff (only 2 Fisheries Officers working on port inspections in Mombasa). Moreover, the legal framework needs to be updated and adjusted in light of regional and international obligations, including in particular the IOTC Port State Measures Resolution. For instance, if a vessel on the IOTC IUU Vessel List were in port, nothing could be done under the current laws and procedures.

A recent study on fisheries licensing (Breuil and Snijman, 2012) showed that the situation regarding MCS in the industrial sector has improved in some aspects. Whilst there are still some challenges regarding information sharing and inter-agency cooperation, an information sharing protocol has been developed, and a Cabinet Memorandum created an Inter-Ministerial Advisory Committee with technical committees and working groups, which already accommodates the creation of a

Fisheries Enforcement Unit, in expectation of the creation of the MCS Unit and Inter-agency MCS Unit as foreseen in the new Bill. The VMS is in the process of being taken over by a new service provider. A patrol vessel, paid for through the WB financed KCDP project, has been ordered and is currently under construction. Finally, the advanced version of the Bill provides for a strong legal framework that substantially incorporates regional and international obligations and is expected to accommodate more effective MCS. The Bill also includes a Lacey-type provision and clearly specifies procedures relating to the compounding process.

Some challenges however remain, including the lack of observers on board industrial fishing vessels, inadequate fines, unclearly defined appointments and mandates of authorised officers versus inspectors, the need for closer cooperation and information sharing between the MoFD the KMA and the KPA, the lack of implementation of port measures and shortcomings in information sharing and the analysis and utilisation of such information to improve MCS decisions and guide MCS actions.

The BMUs are expected to play a significant role in the MCS of the artisanal fisheries. A recent IOC-SmartFish study on IUU fishing (Anderson, 2011), states that the capacity of most BMUs to undertake effective (and low risk) MCS operations has not yet been developed along the Kenyan coast. This is mainly due to the fact that BMUs officials are not authorised officers. Other reasons, of a more social and cultural nature, also contribute to the poor level of delivering local MCS.

Despite the best efforts and several engagements, no significant inroads have been made in Kenya in terms of enforcement training.

16. Major Issues relating to IUU Fishing

As highlighted above, MCS in Kenya is very weak in general, even if recent improvements have been made. P.E. Berg (2011), noted "no single infractions were recorded in the period 2009-2010, indicating that MCS systems are largely dysfunctional and ineffective". The main issue relating to IUU in the marine fishery sector concerns industrial poaching in the deep EEZ. The only reported cases of DWFN vessels identified for illegal fishing were in 2009 during a regional patrol (Kenya, Tanzania and Mozambique) by a South African navy patrol vessel: four vessels were inspected in Kenya waters, three of which were fishing without licences (Transparent Sea website).

During the course of an EU consultant's mission (EC, 2011), a list of IUU fishing phenomena were identified as follows (in addition to industrial poaching in the deep EEZ): unauthorized transhipments in Mombasa port and at sea; non-application of the IOTC management measures; non-reporting or false reporting of DWFN fleet catches; non-compliance with, and lax monitoring of entry/exit rules; unregulated fishing (by vessels flying the Kenyan flag) beyond the national jurisdiction; illegal and unregulated gears in artisanal fisheries; fishing without a permit in artisanal fisheries.

Very few initiatives have been supported by IOC-SmartFish so far, as it has proven difficult to find common ground for additional IOC-SmartFish enforcement support missions.

FOCUS ON FISHERIES MANAGEMENT AND RELATED ISSUES ON LAKE VICTORIA (KENYA JURISDICTION)

17. Administrative Functions

The MoFD's main station for Lake Victoria is located in Kisumu.

All Kenyan fishing vessels operating on Lake Victoria must be registered and all fishers must have a licence: however, no registration database or database of licenced fishers exist (Anderson, 2011).

BMUs (266 BMUs registered according to the Bill, 2011) are thought to hold a substantial amount of information concerning vessels and fishers. Indeed, each BMU is requested to maintain a register of its members and a register of vessels and the gear owned by its members. Such information however, is not readily available.

18. Fisheries Monitoring

Coordinated frame surveys on Lake Victoria fisheries are conducted on a regular basis through the LVFO. The last frame survey was conducted in 2010 with the financial support of the WB LVEMP II project. Frame survey data is entered and checked at the national level before being submitted to the LVFO.

Catch assessment surveys are undertaken, for the most part, by BMU representatives. The data generated is sent to District Fishery Officers who put it into Excel spreadsheets; after which, the data is transmitted to the Fisheries Statistics Office based in Nairobi (Anderson, 2011).

In general, the quality of data collected through the BMUs is poor since data collection focuses on landing and marketing data that yield revenue for the BMUs rather than on data related to fishing effort. Furthermore, BMU data collection is linked to a taxation system with the local authorities and this tends to alter the accuracy of the data.

19. Fisheries Management Systems

Fisheries management on Lake Victoria is mostly influenced by the LVFO. The objectives of the LVFO are to foster cooperation amongst the contracting parties (Kenya, Uganda and Tanzania), harmonize national measures for the sustainable utilization of the living resources of Lake Victoria and to develop and adopt conservation and management measures. In this context, the LVFO provides management support and programme coordination across the three countries and recommendations for Lake Victoria are similar across all three countries (Anderson, 2011).

A series of policy documents have been developed in recent years: the Regional Plan of Action on IUU fishing (RPOA-IUU) in 2004; the Fisheries Management Plan for Lake Victoria 2009 – 2014 in 2008; the Regional Plan of Action on Management of Fishing Capacity (RPOA-Fishing Capacity) in 2007; the Nile Perch Fishery Management Plan for Lake Victoria 2009 –2014 in 2009 (Snijman, 2011). The Organisation also has developed a MCS strategy (see below).

The LVFO Technical Committees have been strengthened in recent years through the participation of stakeholder representatives, through the Regional Beach Management Unit Network Chair for the fishers, and the East Africa Industrial Fishing and Fish Processing Association (EAIFFPA) for

the industry.

Lake Victoria has remained under an open access regime and fishing capacity and effort is steadily increasing in each of the countries including Kenya, despite the fact that the RPOA-Fishing Capacity includes measures aimed at controlling fishing effort through licensing and limitations on the number of fishermen.

Fishing regulations on Lake Victoria, that are applied in all three countries, include minimum mesh-size, maximum length of certain gear, minimum size of species and prohibition of certain gears and methods including trawling, beach seines, monofilament nets, cast nets, drifts nets and the use of chemicals and explosives.

BMUs are also mandated to promote, in close consultation with fisheries officers, a co-management plan for a given area. Co-management plans can include closed seasons, restrictions on the type of fishing gears used and limitations on the number of fishing units. However, such co-management plans still have to be developed.

20. Fisheries Control, Surveillance and Enforcement

The LVFO MCS Strategy identifies the main threats to sustainability from illegal activities as follows: use of illegal gears such as beach seines, monofilament nets and undersized gill nets; capture, transport and processing of immature fish; fishing in restricted areas; and, fishing without the necessary permits.

The LVFO has a MCS-RWG (Regional Working Group) that meets to discuss MCS interventions including patrol planning. The MCS-RWG work designed the MCS Standard Operating Procedures (SOPs), which clearly underline the rules of engagement (ROE), patrol mission standards, the harmonization of data collecting and handling of suspects, etc. (Kariuki, 2012). Regional MCS initiatives however, are faced with financial constraints, in particular for regional patrols, and with insufficient political will to support such initiatives.

During the EU-funded 'Implementation of the Fisheries Management Plan (IFMP), LVFO purchased a 10 m patrol vessel for each member state including Kenya: this vessel is no longer operational. IOC-SmartFish rehabilitated 2 of the 6 m patrol vessels in Kisumu, with new engines and expensive hull repairs. The status of these vessels is not currently known.

Theoretically, the BMUs should be closely involved in MCS on a voluntary basis. However, barriers towards voluntary compliance are complex due to a number of factors including social considerations, conflict of interest, corruption, political interference, lack of support from government departments (fisheries, police, etc.), security issues, and safety issues concerning MCS operations (Kariuki, 2012). IOC-SmartFish assisted a BMU in Kenya to obtain a wooden vessel and a 40 HP outboard engine: this vessel is still in service, funded by the BMU's members, to undertake enforcement activities and remove illegal gears.

Industry, through a regional umbrella organisation grouping together the three national associations (AFIPEK for Kenya), also participates in MCS efforts. Initiatives aim to ensure self-control in factories to fight against the processing of undersized fish. Companies that do not comply are subjected to export bans. Even though self-control is not part of the RPOA-Fishing Capacity, it is seen as a very important addition to it (De Beule Asadi Ltd., 2012).

21. Major Issues Relating to IUU Fishing

A regional study on IUU fishing on Lake Victoria was recently conducted under IOC-SmartFish (Kariuki, 2012). This study indicated that illegal fishing gear used on Lake Victoria included long-lines with under-sized hooks, gillnets with a small mesh size, monofilament gears, beach seines, as well as poisons, dynamite and cast nets. Current IUU fishing on Lake Victoria, despite its importance, is not easy to quantify. As a qualitative assessment, it can be stated that IUU fishing is rampant. Non-compliance rates similar to Uganda and Tanzania were observed during IOC-SmartFish training operations.

Between 2000 and 2008, frame survey and MCS compliance missions noted a marked increase in the number of illegal gears being deployed to target undersized Nile Perch. Previously driven by lucrative export prices for Nile Perch, fishers now target undersized, illegal Nile Perch for the lucrative domestic and regional trade, which is estimated to exceed export trade in terms of both volume and value (Kariuki, 2012).

In 2009, the EAC Council of Ministers launched 'Operation Save the Nile Perch' (OSNP), which required each of the three member states to contribute US $600 000. The goal of the initiative is to target illegal fishing and curb the trade in undersized Nile Perch. As of 2011, less than half the required funds were mobilized by the member states, which has undermined the legitimacy and efficiency of this operation.

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FISHERIES IN THE ESA-IO REGION: PROFILE AND TRENDS

COUNTRY REVIEW - 2014

KENYA

Smart FISH

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