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MINISTRY OF AGRICULTURE, LIVESTOCK, FISHERIES & COOPERATIVES



STATE DEPARTMENT FOR FISHERIES AND THE BLUE ECONOMY



KENYA FISHERIES SERVICE



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TABLE OF CONTENTS

TABLE OF CONTENTS	1
LIST OF TABLES	3
LIST OF FIGURES	4
1.0 INTRODUCTION	5
2.0 NATIONAL FISH PRODUCTION	6
3.0 INLAND CAPTURE FISHERIES	11
3.1 LAKE VICTORIA FISHERY	11
3.2 LAKE TURKANA FISHERY	4
3.3 LAKE BARINGO FISHERY	7
3.4 LAKE NAIVASHA FISHERY	9
3.5 LAKE JIPE FISHERY	11
3.6 TANA RIVER DAMS FISHERY.....	11
3.7 LAKE KENYATTA FISHERY.....	12
3.8 LAKE KANYABOLI FISHERY.....	13
3.9 TURKWEL DAM	14
3.10 TANA RIVER DELTA.....	14
3.11 RIVERLINE.....	15
4.0 MARINE CAPTURE FISHERY	16
4.1 MARINE ARTISANAL LANDINGS	16
4.2 MARINE INDUSTRIAL LANDINGS.....	20
4.2.1 Trawling.....	20
4.2.2 Shallow water prawn trawl fishery	20
4.2.3 Deepwater trawl fishery.....	22
4.3 Industrial longline data.....	23
4.3.1 Longlining	23
5.0 AQUACULTURE (FISH FARMING)	1
5.1 INTRODUCTION.....	1
5.2 Aquaculture Production.....	2
6.0 EXPORTS OF FISH AND FISHERY PRODUCTS	4
6.1 Marine Aquarium exports	6
6.1.2 Invertebrates	6
7.0 IMPORTS OF FISH AND FISHERY PRODUCTS	8
ANNEXES	10
Annex 1. The monthly composition of the top 20 most exported marine aquarium species in 2017.....	10

Annex 2. The monthly composition of the top 20 most exported marine invertebrate species in 2017.....	11
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LIST OF TABLES

Table 2. 1 Fish landings by Weight, Value, Number of Fishers, Ponds and fishing Crafts 2017	9
Table 2. 2 Quantity and Value of fish landings 2015 – 2017	9
Table 3. 1 Lake Victoria fish landings by Species, by County quantity and values 2017.....	13
Table 3. 2 Lake Victoria fish landings by Species, Weight and Value 2015 – 2017	2
Table 3. 3 Lake Victoria Monthly fish landings by Species, Weight (M. Tonnes) 2017	3
Table 3. 4 Lake Turkana monthly fish landings by Weight and Value 2017	6
Table 3. 5 Lake Baringo Monthly fish landings by Species, Weight and Value 2017	8
Table 3. 6 Lake Naivasha Monthly fish landings by Species, Weight and Value 2017	10
Table 3. 7 Lake Kanyaboli fish catch in 2017	13
Table 4. 1 Marine Fish Landings by Species, Weight and Value 2014 to 2017.....	19
Table 4. 2 Marine Fish Landings by Species, Weight and Value per County	20
Table 4. 3 Monthly fish catch (kgs) from the shallow water prawn fishery, 2017	21
Table 4. 4 Monthly fish catch from the trawl fishery off Malindi-Ungwana Bay (deep sea), 2017.....	23
Table 4. 5 Monthly fish catch from Longline offshore fishery, 2017.....	23
Table 5. 1 Fish landings by Weight and Value from Aquaculture, mariculture and Cage culture 2015-2017	2
Table 6. 1 Exports of Fish and Fishery Products 2017	5
Table 7. 1 Imports of Fish and Fishery Products 2017	9

LIST OF FIGURES

Figure 1. 1 Map showing the major inland water bodies and riverine system in Kenya.....	6
Figure 2. 1 Fish Production by quantity and value 2008-2017.....	8
Figure 2. 2 National fish production by Fishery Category 2017	8
Figure 3. 1 Trends in annual fish landings from Lake Victoria fishery 2009-2017	12
Figure 3. 2 Lake Victoria species catch composition 2007-2017.....	1
Figure 3. 3 Lake Victoria species catch composition 2017	1
Figure 3. 4 Lake Victoria fish landings by Counties 2017	2
Figure 3. 5 Trends in annual fish landings from Lake Turkana fishery 2009-2017	5
Figure 3. 6 Species composition in catches of Lake Turkana Fishery 2017.....	6
Figure 3. 7 Trends in annual fish landings from Lake Baringo fishery 2009-2017.....	7
Figure 3. 8 Percentages catch by species composition in Lake Baringo in 2017	8
Figure 3. 9 Trends in annual fish landings from Lake Naivasha fishery 2009-2017.....	9
Figure 3. 10 Lake Jipe fish catch trends in metric tons 2009 – 2017	11
Figure 3. 11 Tana River Dams fish catch trends in metric tons 2009 – 2017.....	12
Figure 3. 12 Lake Kenyatta fish catch trends in metric tons 2008 – 2017	12
Figure 3. 13 Lake Kanyaboli fish catch trends in metric tons 2012-2017.....	13
Figure 3. 14 Turkwel Dam fish catch trends in metric tons 2013-2017	14
Figure 3. 15 Tana River delta fish catch trends in metric tons 2013-2017.....	15
Figure 4. 1 Trends of marine fish production by quantity and value 2008-2017	16
Figure 4. 2 Percentage contribution of marine fish species groups 2017	17
Figure 4. 3 Trends of landings of marine fish species groups 2014-2017.....	17
Figure 4. 4 Marine fish production by Quantity, Value and Counties 2017.....	18
Figure 4. 5 Monthly trends in catch levels and value from the shallow prawn trawl fishery, 2017.....	22
Figure 4. 6 Monthly trends in catch levels and value from the trawl fishery off Malindi- Ungwana Bay (deep sea), 2017.....	23
Figure 4. 7 Monthly fish catch from Longline offshore fishery, 2017	24
Figure 5. 1 Aquaculture production for last five years (2009-2017)	3
Figure 6. 1 Exports Products by destinations- 2017	4
Figure 6. 2 Export’s value of fish by product type in millions of Kshs. during 2017	5
Figure 6. 3 Annual trends of aquarium fish exports in numbers and value in during 2010 - 2017.....	6
Figure 6. 4 Annual trends in the marine invertebrates’ exports in numbers and value during 2010 – 2017.....	7
Figure 7. 1 Import of fish and fish products by quantities (MT) for 2017	8
Figure 7. 2 Fish imports in tons by Country of origin for 2017.....	8

1.0 INTRODUCTION

Fisheries production in Kenya classified into three groups; fresh water capture fisheries, marine capture fisheries and aquaculture. The major sources of capture and aquaculture data and corresponding values are fisher folks dealing with marine and inland fishing at the Beach Management Units (BMUs); aquaculture farmers, County departments of Fisheries in the various counties, Kenya Marine and Fisheries Research Institute, Kenya National Bureau of Statistics (KNBS), Association of Fish Processors and Exporters of Kenya (AFIPEK), Government and County fish farms and hatcheries, Fish and fish products markets.

On fisheries data exchange, the State Department for Fisheries and the Blue Economy has active collaborative initiatives with various organizations. Due to the fact that some of the most important fisheries in the country are trans-boundary, there are strong mechanisms of data sharing with the aim of fostering better management of the shared fisheries resources. The department thus exchanges data with regional bodies such as the Lake Victoria Fisheries Organization (LVFO), the Indian Ocean Tuna Commission (IOTC), the Food and Agricultural Organization (FAO) and the South West Indian Ocean Fisheries Commission (SWIOFC). Data exchange with these organizations is wide ranging encompassing all aspects of fisheries.

LVFO is also involved in setting benchmarks of data collections protocols by issuing standard operating procedures in data collection and analysis so that the data thus collected can be compared across the shared water body regardless of the country. Data exchange with Indian Ocean Tuna commission (IOTC) concerns tuna and tuna like species which are highly migratory. The stocks are shared by the countries bordering the Indian Ocean and for effective management, the member countries share fisheries data to enable species specific stock assessment in the Indian Ocean. The South West Indian Ocean Fisheries Commission mainly deals with demersal species, near-shore pelagic, crustaceans and molluscs which mainly are within a country's water boundaries or are shared with the immediate neighbours. The department also makes submissions to FAO statistical year books as well as for the annual economic survey reports by Kenya National Bureau of Statistics.

This report details on the fisheries production data for the years 2017 and compares the results with those of the previous years. The imports and export data are also important for evaluation of the per capita consumption of fish in the country.

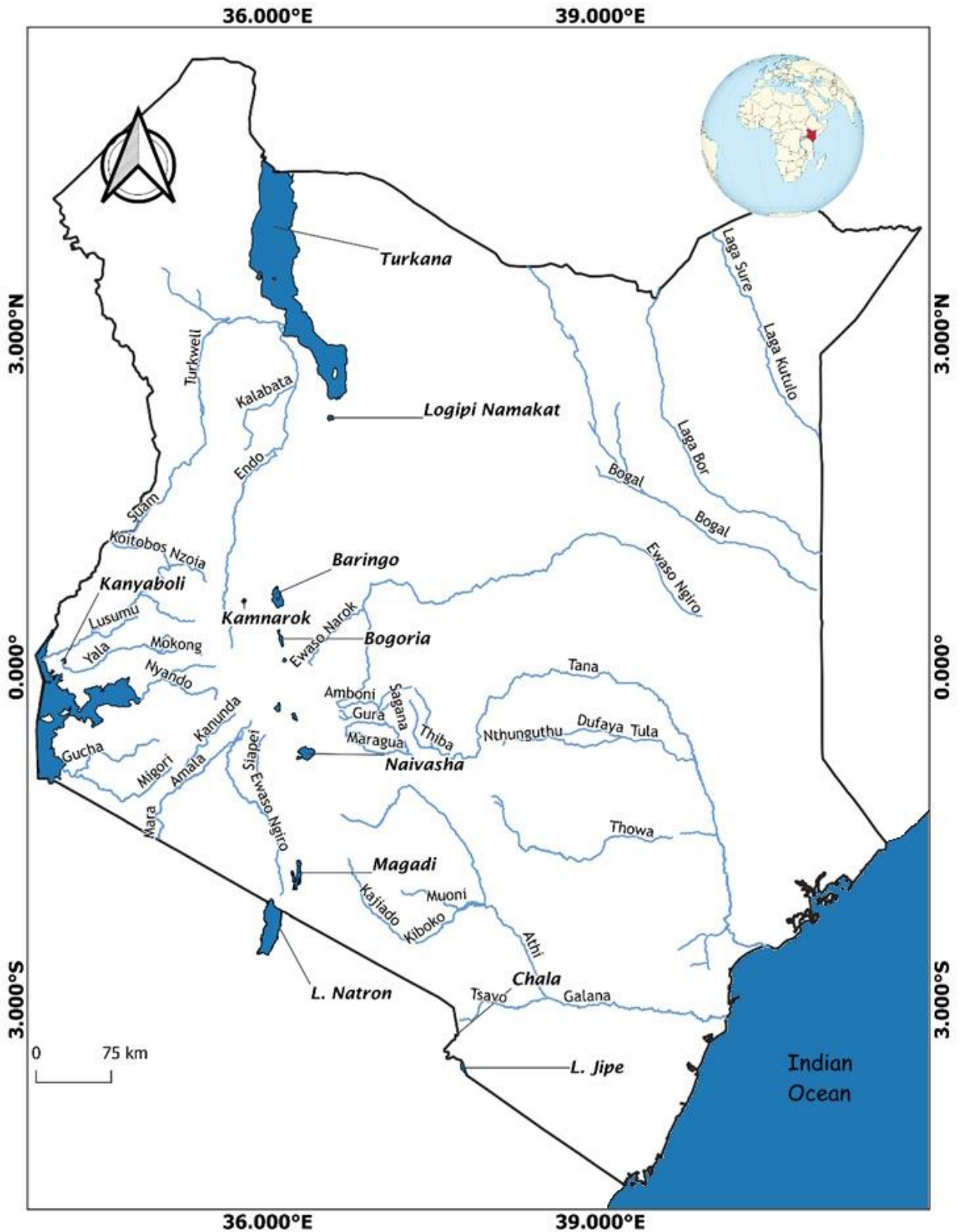


Figure 1. 1 Map showing the major inland water bodies and riverine system in Kenya

2.0 NATIONAL FISH PRODUCTION

Kenya is endowed with both marine and inland water resources. The inland water resources include lakes, dams and rivers of varying sizes. Some of the major lakes include: Lake Turkana (6,405 Km²), Lake Victoria-Kenyan side (6% of the whole lake =4,128 km²), Naivasha (210 Km²), Baringo (129 Km²), and Lake Jipe (39 Km²). Major rivers include Tana (700 Km), Athi/Galana/Sabaki (530 Km), Ewaso-Ngiro-North (520 Km), Kerio (350 Km), Suam-Turkwel (350 km), Mara (280 km), Nzoia (240 km), Voi (200 km), Yala (170 km), Ewaso Ngiro-south (140 km), Sondu (105 km), Malewa (105 km) and Kuja (80 km). Also, across the country are dams stocked with fish and in areas like Uasin Gishu and Laikipia, the fish production is quite substantial.

Further to these inland water resources, Kenya also enjoys a vast coastline of 640 km on the Western Indian Ocean, besides a further 200 nautical miles Exclusive Economic Zone (EEZ) under Kenyan jurisdiction. The total area of the territorial waters is 9,700 Km² while the Kenyan EEZ is 142,400 Km². Kenya also lays claim to extended EEZ reaching 350 km with an extra area of approximately 103,320 Km². The total area for exploitation by the country is a massive 255,420 Km² which is about half of the Kenyan land cover area.

The Kenyan fishery is mainly artisanal with very few commercial/industrial vessels targeting mainly shallow water shrimps, deep water shrimps and lobsters. The country has for a period been having a Kenyan flagged long liner exploiting the EEZ. Other vessels are purse seines and long liners owned by Distant Water Fishing Nations (DWFN) which operate under Kenyan license in our Economic Exclusive Zone (EEZ) targeting Tuna and Tuna like species. The artisanal fishery accounts for most the inland and marine water catches reported in this bulletin and consequently it is currently the most important fishery in the country, even though our EEZ which is predominately for commercial fishing is under exploited with an estimated potential of between 150,000 to 300,000 metric tons (Commonwealth secretariat report 2003 by Dr. George Habib).

During the year (2017) under review, the total fish production was 135,895 metric tons worth 23,514 million Kenya shillings (Figure 1). The production was 3.4 % decline compared to 147,761 metric tons worth 24,348 million Kenya shillings landed in 2016. Most of the production as in the past was from Inland water capture fisheries amounting to 99,753 metric tons with an ex-vessel value of 15,290 million Kenya shillings. The production from marine sources and aquaculture was 23,786 metric tons and 12,356 metric tons worth Kshs. 4,532million Kenya Shillings and Kshs 3,691 million Kenya shilling respectively (Fig 2)

Inland water capture fisheries contributed 73.3% of Kenya’s total fish production, with the principal fishery being that of Lake Victoria. The lake accounted for 92,722 metric tons or 93.2% of the country’s total annual inland fish production in 2017. Lake Turkana, Kenya’s largest freshwater body (6,405 km²) produced 4,021 metric tons of fish during the year under review. Other freshwater-bodies of commercial importance included lakes Naivasha (1,689MT), Baringo (155MT), Jipe (112 MT).

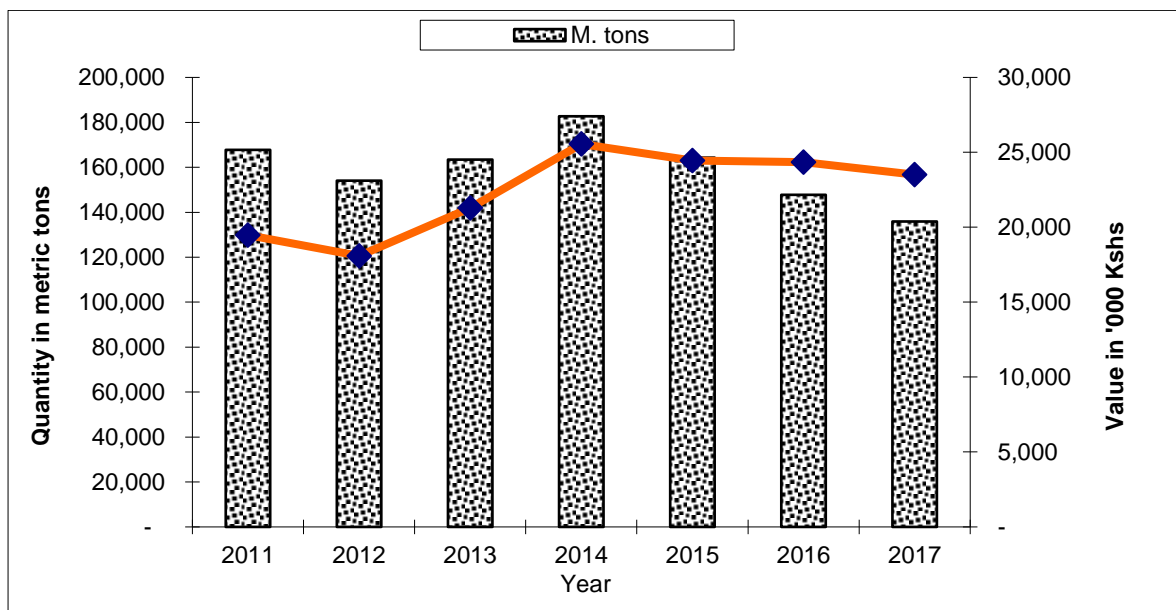


Figure 2. 1 Fish Production by quantity and value 2008-2017

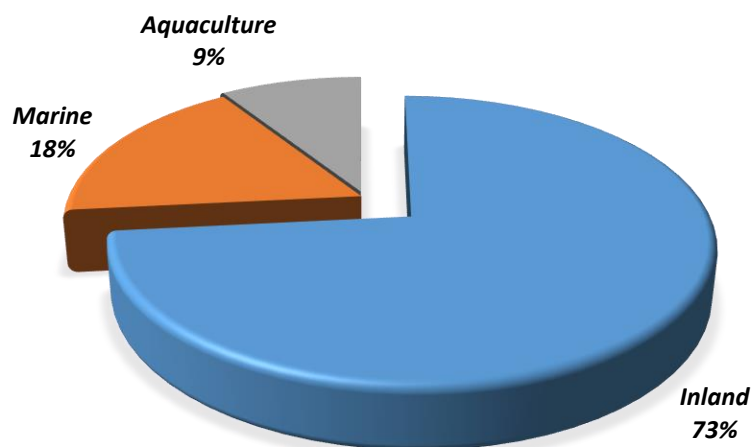


Figure 2. 2 National fish production by Fishery Category 2017

The fish and fish products produced in the country are marketed domestically or exported to the international markets. The main fish and fishery products exported during the year under review included Nile perch products (fillets, maws, headless and gutted whole Nile perch), Octopus, Fish meal, and marine shells. Fish and fishery products imported into the country

including the following products, among others: frozen mackerels, frozen tilapia, frozen tilapia fillets, frozen sardines, frozen pangasius fillets, and tuna fish meals, among others.

The fisheries production by different water bodies in 2017 is shown in table 1. Table 2 compares the fish production for the past three years (2015– 2017)

Table 2. 1 Fish landings by Weight, Value, Number of Fishers, Ponds and fishing Crafts 2017

Fresh water	M. tons	000 Kshs.	Fishers	Farmers	Crafts	Ponds
Lake Victoria	92,722	14,602,568	43,653		14,365	
Lake Turkana	4,021	486,540	7,000		1650	
Lake Naivasha	1,689	222,579	120		47	
Lake Baringo	155	46,606	150		50	
Lake Jipe/Dams	112	21,756	66		46	
Lake Kanyaboli	127	26,346	188		99	
Lake Kenyatta	45	3,473	120		40	
Tana River dams	422	84,500	316		180	
Tana River Delta	115	9,296	220		83	
Fish Farming	12,356	3,691,046		59,095		55,750
Turkwel Dam	35	9,905				
Riverine	10	2,368				
Small Dams	300	75,120				
Total Fresh water	112,109	19,282,103	51,833	59,095	16,477	55,750
Marine Artisanal	23,286	4,375,822	13,417		2,974	
Mariculture	51	1,530				
Marine Industrial	449	126,376				
Total Marine	23,786	4,503,728	13,417		2,974	55,750
Grand Total	135,895	23,785,831	65,250	59,095	19,451	111,500
	M. tons	000 Kshs.	% Quantity	% Value		
Inland Capture	99,753	15,591,057	73.4	64.5		
Aquaculture	12,356	3,691,046	9.1	15.9		
Marine Capture	23,786	4,503,728	17.5	19.5		
Total	135,895	23,785,831	100	100		

Table 2. 2 Quantity and Value of fish landings 2015 – 2017

	2015		2016		2017	
FRESH WATER	M. tons	000 Kshs	M. tons	000 Kshs	M. tons	000 Kshs
L. Victoria	109,902	14,494,839	98,166	15,826,307	92,722	14,302,568
L. Turkana	10,605	735,717	7,926	576,493	4,021	486,540
L. Naivasha	1,072	132,617	1,064	141,006	1,689	222,579
L. Baringo	176	54,859	141	49,173	155	46,606
L. Jipe/Dams	122	21,031	127	24,871	112	21,756
Lake Kanyaboli	100	9,874	262	43,805	127	26,346
Lake Kenyatta	64	5,085	48	4,560	45	3,473
Tana River Dams	852	115,020	444	72,229	422	84,500
Tana Delta	54	4,818	20	1,970	115	9,296
Fish Farming	18,656	5,014,149	14,952	4,254,002	12,356	3,691,046
Turkwel dam	28	5,936	42	9,030	35	9,905
Riverine	24	4,212	14	3,500	10	2,368

Small dams					300	75,120
TOTAL	141,655	20,598,157	123,207	21,006,947	112,109	18,982,103
Marine Artisanal	22,407	3,795,575	24,165	4,690,541	23,286	4,377,352
Marine Industrial	248	69,599	544	177,947	449	126,376
Marine Total	22,655	*3,865,174	24,709	*4,868,488	23,786	*4,503,728
GRAND TOTAL	182,710	25,607,461	164,478	24,491,946	135,895	23,485,831

* Includes value of aquarium fish

3.0 INLAND CAPTURE FISHERIES

Most of the fish landings from inland capture fisheries in Kenya are from lakes Victoria, Turkana, Naivasha, Baringo, Jipe, Tana River dams, and Tana river delta (Omondi, et al., 2014). The rest are from the dams and rivers. In capture fisheries, gill netting was the most commonly used fishing method during the year. The other methods included using gears such as longline hooks, hand lines, traditional traps, trolling, ring nets, cast nets, and tiny (mosquito) seines for *Rastrineobola argentea* fishing. Other methods are used though they are prohibited due to their destructive nature. They include; Beach seining, monofilament gill netting, trawl netting, scuba diving, spear gunning, and vertical integration of gears.

3.1 LAKE VICTORIA FISHERY

Lake Victoria's contribution to total national annual inland fish production is an enormous 92,722 Metric tons of the total inland fisheries production of 112,109 Metric tons, which is (83% of total 2017 national landing) even in the face of rapidly declining fish stocks in the lake (Masai, Ojuok, & Ojwang, 2006). Capture fisheries of Lake Victoria are a source of livelihood to many people employed directly as boat owners, fishers, fish traders, fish processors, etc., and indirectly as fishing gear manufacturers, boat builders, and ice producers.

During 2017, fish production from Lake Victoria decreased from 98,166 metric tons to 92,722 metric tons with an ex-vessel value of Kshs 14,302 million Kenya shillings, compared to 14,603 million Kenya shilling an ex-vessel value of 2016. This year's landings decreased by 5.5% compared to 2016, while the ex-vessel value decreased by 4.3% from the ex-vessel value of 2016.

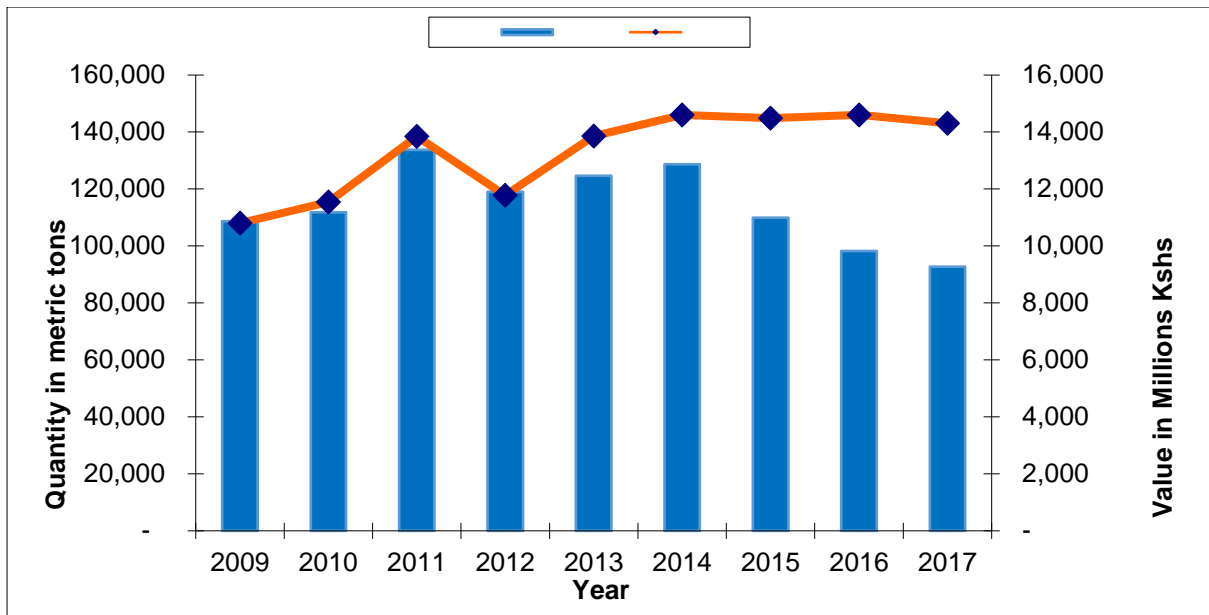


Figure 3. 1 Trends in annual fish landings from Lake Victoria fishery 2009-2017

Table 3. 1 Lake Victoria fish landings by Species, by County quantity and values 2017

County	Homa Bay		Siaya		Busia		Migori		Kisumu		Total	
Species	M.ton	Value '000	M.ton	Value '000	M.ton	Value '000	M.ton	Value '000	M.ton	Value '000	M.ton	Value '000
Clarias	142	26,052,677	568	121,108,067	1	393,924	2	532,714	264	74,780,829	977	222,868,210
Rastreonobola	35,042	2,479,878,671	14,284	1,234,457,210	4,343	445,105,041	842	177,736,011	503	124,195,182	55,014	4,461,372,116
Haplochromis	744	60,409,444	207	29,294,628	116	19,771,009	-	5,663	57	15,182,467	1,124	124,663,211
Lates niloticus	3,524	1,758,071,172	11,468	5,403,669,901	724	228,825,690	1,004	427,180,210	279	125,827,168	16,999	7,943,574,142
Protopterus	95	20,520,250	385	73,044,358	3	878,201	5	2,490,552	166	51,429,914	654	148,363,275
Tilapia niloticus	1,233	223,603,561	6,551	638,861,481	1,789	280,693,000	149	18,863,209	458	92,543,946	10,180	1,254,565,198
Others	1,752	28,562,595	2,708	26,665,669	34	813,538	2	69,404	3,277	90,870,654	7,773	146,981,860
	42,532	4,463,306,298	36,171	7,308,035,633	7,010	948,061,317	2,003	608,633,369	5,004	558,100,540	92,721	14,302,388,012

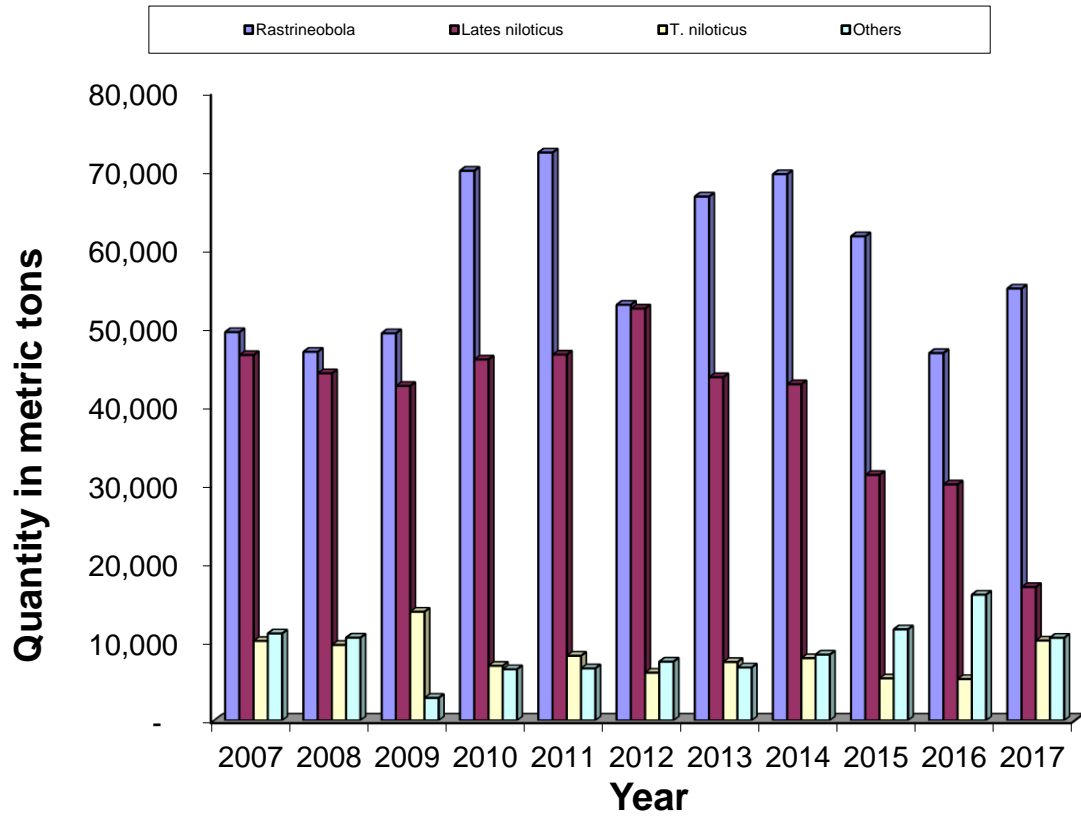


Figure 3. 2 Lake Victoria species catch composition 2007-2017

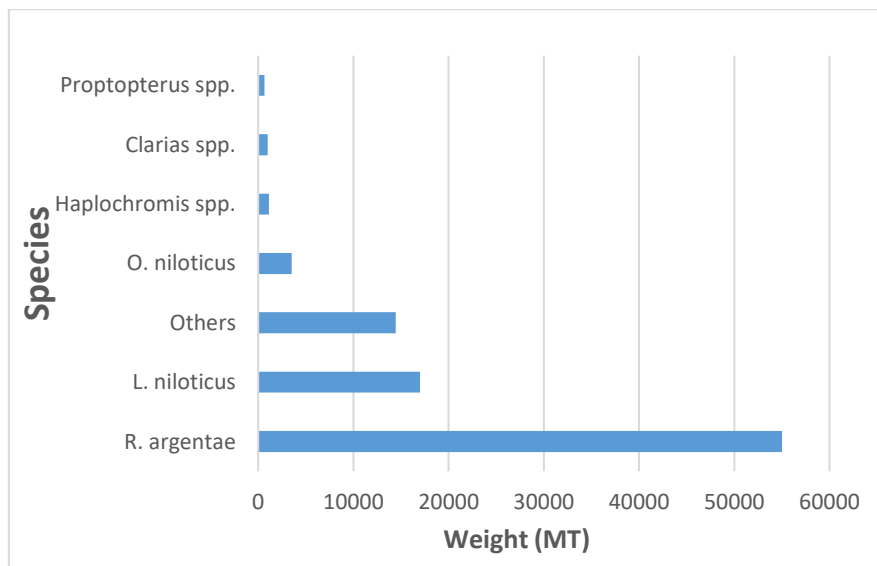


Figure 3. 3 Lake Victoria species catch composition 2017

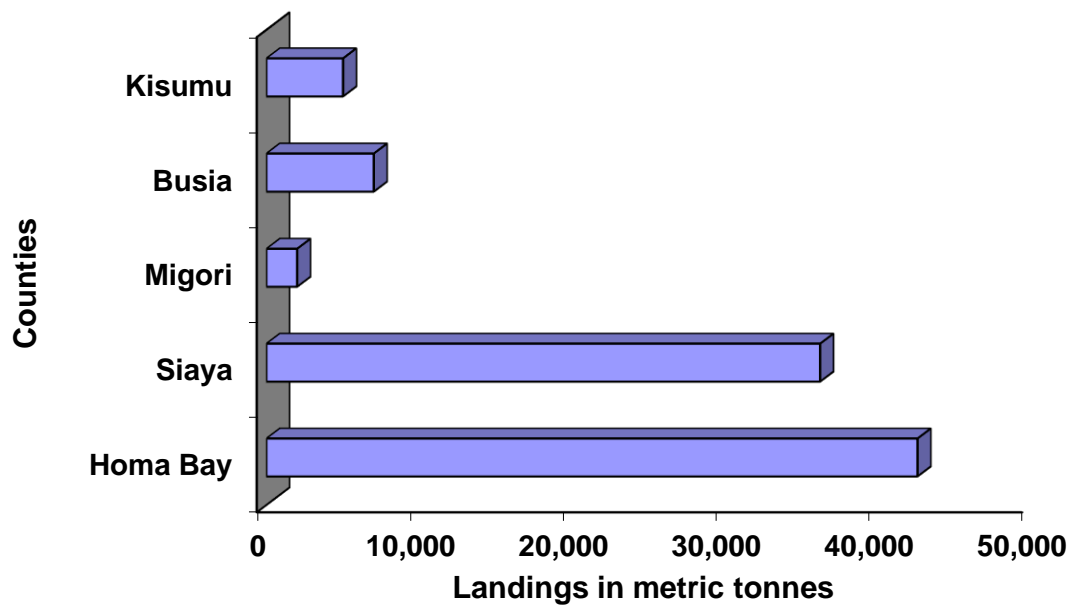


Figure 3. 4 Lake Victoria fish landings by Counties 2017

Table 3. 2 Lake Victoria fish landings by Species, Weight and Value 2015 – 2017

<i>Species</i>	<i>2015</i>		<i>2016</i>		<i>2017</i>	
	Metric tons	% Comp	Metric tons	% Comp	Metric tons	% Comp
<i>L. niloticus</i>	31,287	28	30,070	31	16,999	18.3
<i>R. argentae</i>	61,662	57	46,810	48	55,014	59.3
<i>O. niloticus</i>	5,352	5	5,267	5	10,181	11.0
<i>Clarias spp.</i>	2,402	2	2,115	2	977	1.1
<i>Proopterus spp.</i>	975	1	968	1	654	0.7
<i>Haplochromis spp.</i>	2,616	2	2,192	2	1,124	1.2
<i>Others</i>	5,608	5	10,744	11	7,773	8.4
TOTAL	109,902	100	98,166	100	92,722	100

Table 3. 3 Lake Victoria Monthly fish landings by Species, Weight (M. Tonnes) 2017

MONTH	JAN	FEB	March	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	Total
SPECIES	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT	MT
Clarias spp	91	85	75	75	89	90	86	86	74	73	87	67	977
R. argentea	2,769	4,692	5,389	3,557	4,969	4,492	4,868	5,082	6,320	4,213	4,200	4,462	55,014
Haplochromis spp	62	47	134	58	111	131	117	77	51	65	210	60	1,124
Lates niloticus	1,364	1,367	1,349	1,509	1,520	1,509	1,546	1,471	1,357	1,294	1,408	1,305	16,999
O. niloticus	249	267	264	272	272	303	319	276	296	293	326	370	3,505
Caradina niloticus	470	525	571	457	469	474	473	555	553	1,160	485	485	6,676
Protopterus spp	52	52	45	47	67	60	68	62	64	53	43	42	654
Others	546	581	637	539	560	546	543	632	632	1,247	764	546	7,773
TOTAL	5,603	7,615	8,463	6,514	8,057	7,605	8,019	8,240	9,346	8,398	7,524	7,337	92,722

The State Department of Fisheries is concerned about the sustainability of Lake Victoria fisheries. Scientists have advised that the fish stocks are continuously declining and unless this is effectively dealt with, the sustainability of the fishery remains under threat. This will eventually have a negative impact on other businesses and the fishers. All stakeholders especially fish processors and gear distributors should collaborate with the State Department of Fisheries in order to manage Lake Victoria fisheries resources sustainably. Many illegal gears are still in use and this can only be controlled with the cooperation of all the stake holders.

3.2 LAKE TURKANA FISHERY

Lake Turkana is Africa's fourth largest lake by volume and Kenya's largest inland lake measuring about 249 km long by 48 km at its widest part, with a delta extending into Ethiopia. Over 90% of the annual water discharge by volume is from river Omo originating from the Ethiopian highlands while the rest is from seasonal rivers Kerio and Turkwel. River Omo drains a large portion of the south western highlands of Ethiopia and therefore influences fluctuations in the lake's water level, which in turn affects the amount (or abundance) of fish stocks and hence fish production from the lake. With no surface outlet, the water budget is a balance between river inflow and evaporation which imposes special physical chemical conditions making the lake saline. Therefore, any activities dealing with water abstraction or damming that interferes with the natural discharge rates of river Omo has a negative effect on the lake volume levels.

The lake has about 48 species of fish with a dozen supporting a commercial fishery. The species exploited commercially include, *Nile perch (Lates niloticus)*, *Tilapia (Oreochromis niloticus)*, *Catfish (Clarias gariepinus)*, *synodontis schall*, *Hydrocynus forskalii*, *Labeo horie*, *Bagrus spp*, *Distichodus niloticus*, *Citharinus spp*, *Barbus spp* and *Alestes spp*. The fishery is characterized by bust cycles in fish landings associated with fluctuations in lake levels due to the dynamics of the climatic conditions especially precipitation leading to filling and drying up of the Ferguson's gulf. The filling up of the Ferguson's gulf is associated with boom in fish catches especially tilapias. The peripheral communities entirely rely on fishing directly supporting about 7,000 fishers and 6,500 fish traders and transporters.

During the year under review, a total of 4,021 metric tons of fish were landed with an ex-vessel value of Kshs. 486,540 thousand. This years' production was a decrease of 49% in quantity coupled with a decrease of 15.6% in ex-vessel value compared to 2016 production of 7,926 Metric tons and an ex-vessel value of Kshs 576,493 thousand. The trends in annual fish catches from Lake Turkana are determined by the lakes' water level and for that the catches have been unpredictable for a long time. But there has been a continuous decline in the catches since 2009 apart from the increase in 2015 catches which has now declined in 2016 and 2017.

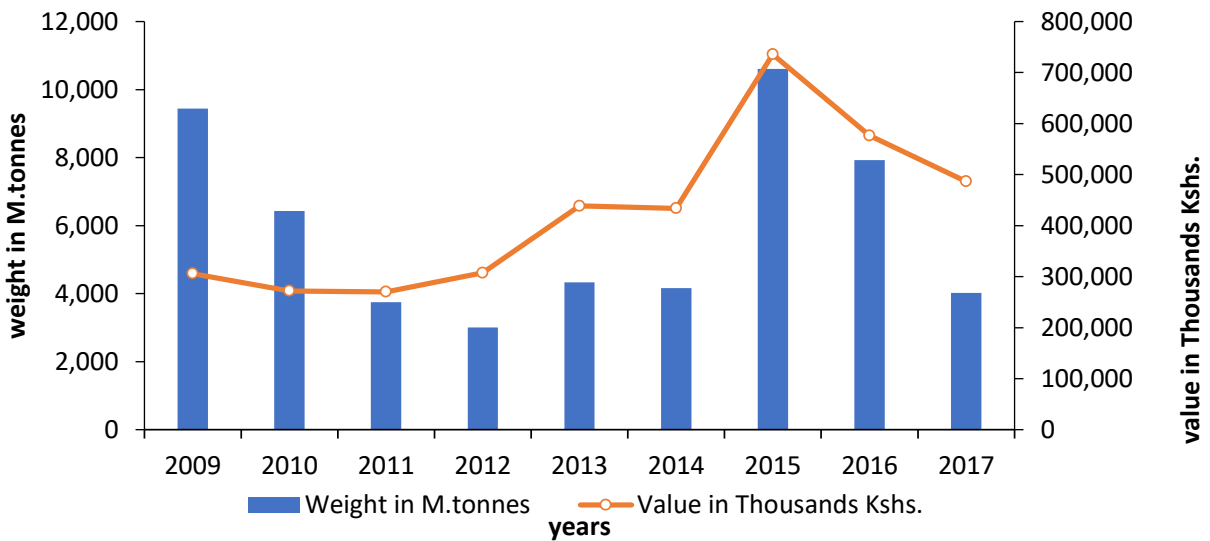


Figure 3. 5 Trends in annual fish landings from Lake Turkana fishery 2009-2017

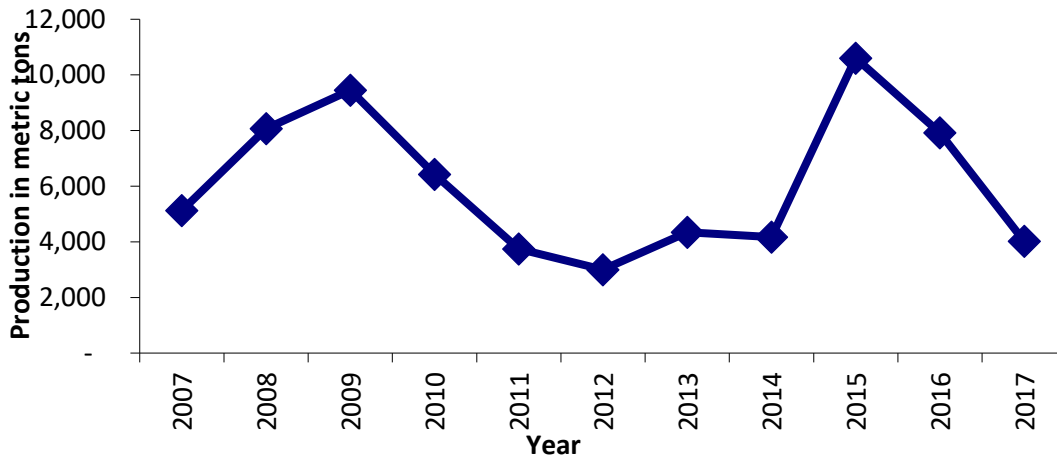


Table 3. 4 Lake Turkana monthly fish landings by Weight and Value 2017

Species	<i>Alestes spp</i>	<i>Bagrus spp</i>	<i>Citharinus spp</i>	<i>Clarias spp</i>	<i>Distichodus niloticus</i>	<i>Hydrocynus spp</i>	<i>Labeo spp</i>	<i>Lates niloticus</i>	<i>Oreochromis niloticus</i>	<i>Synodontis spp</i>	TOTAL
Jan-17	11,450	1,100	533	7	2,242	23	5,943	153	234,318	1,837	257,606
Feb-17	8,347	3,860	17	153	1,711	17	7,740	1,050	420,290	1,792	444,977
Mar-17	17,000	478	123	167	1,400	25	7,087	11	598,884	1,050	626,225
Apr-17	8,300	1,002	320	-	834	-	6,065	40	162,826	1,842	181,229
May-17	2,600	200	-	1,407	-	134	1,558	1,558	156,100	1,618	165,175
Jun-17	3,600	200	180	18	-	-	1,183	17	439,999	952	446,149
Jul-17	1,600	-	-	18,199	173	3	567	38,402	355,710	1,203	415,857
Aug-17	186	1,270	96	13,712	-	86,230	9,290	3,627	204,492	3	318,906
Sep-17	16,600	10,500	-	1,448	-	-	15,670	16,393	392,957	311	453,879
Oct-17	54,550	813	8,087	16,875	138	1,819	46,177	5,209	167,673	2,489	303,830
Nov-17	20,000	5,216	-	1,241	1,935	-	16,700	926	182,255	1,788	230,061
Dec-17	13,400	-	-	224	404	-	4,502	275	157,980	218	177,003
Total	157,633	24,639	9,356	53,451	8,837	88,251	122,482	67,661	3,473,484	15,103	4,020,897

During the year under review, *Tilapia spp.* dominated the landings by contributing 3473 Metric tons representing 86% of the 2017 catch, followed by *Alestes spp.* of 158 metric tons (4%), *Labeo spp.* of 122 metric tons (3%) and *Lates niloticus* of 68 metric tons each representing (2%) while others contributed 199Mt (5%) (Figure 9).

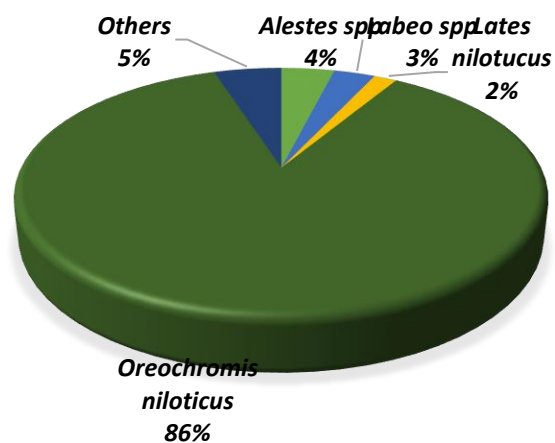


Figure 3. 6 Species composition in catches of Lake Turkana Fishery 2017

3.3 LAKE BARINGO FISHERY

Lake Baringo is one of the Rift valley lakes with a surface area of 130 Km² and a mean depth of 5.6 meters. The lake has rivers El Molo, Perkerra and Ol arabel as the main inlets but with no obvious outlet and the waters are assumed to seep through to the underground bedrock which is believed to be volcanic. The fishery of Lake Baringo is currently based on four species including *Oreochromis niloticus* (Tilapia), *Barbus gregorii*, *Clarias mossambicus* and *Protopterus aethiopicus* which was introduced in the lake.

The fishery was previously based on the tilapine species, however owing to changes in the lakes biophysical processes such as siltation and species introductions, the fishery is currently dominated by *Protopterus aethiopicus*. During the year under review a total of 155 tons of fish with an ex-vessel value of Kshs. 46,606 thousand were landed. This was an increase of 9.9% in quantity and a corresponding increase of 12% in ex-vessel value compared to last year's production of 141 tons valued at Kshs. 41,595 thousand.

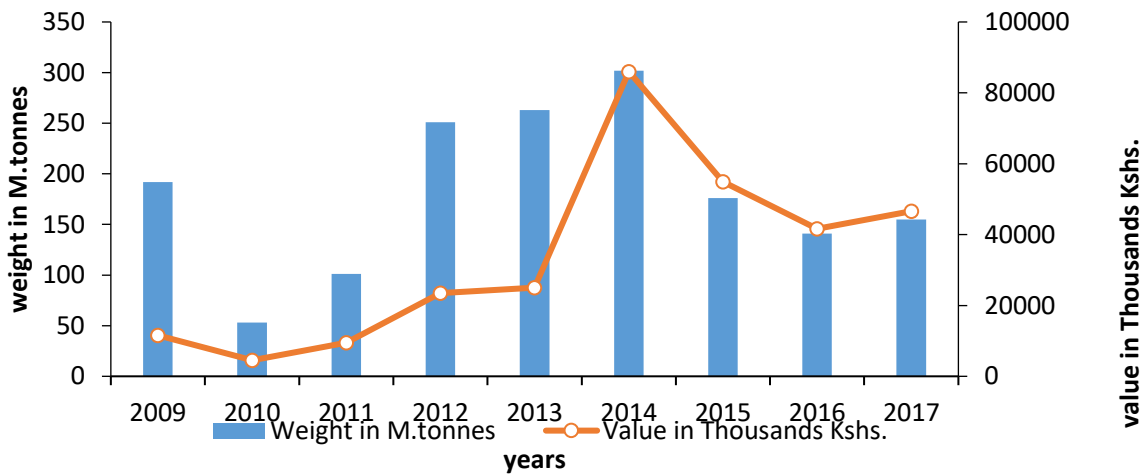


Figure 3. 7 Trends in annual fish landings from Lake Baringo fishery 2009-2017

Table 3. 5 Lake Baringo Monthly fish landings by Species, Weight (Kg) and Value 2017

SPECIES	Barbus	Clarias	Protopterus	Tilapia niloticus	TOTAL
January	876	850	11,450	1,400	14,576
February	640	730	9,786	1,245	12,401
March	336	550	7,000	2,100	9,986
April	980	850	10,714	1,007	13,551
May	1,030	758	9,757	2,256	13,801
June	1,659	759	8,900	2,400	13,718
July	1,234	978	9,890	1,400	13,502
August	980	898	10,546	1,700	14,124
September	1,675	680	10,789	2,600	15,744
October	879	560	5,678	1,600	8,717
November	1,250	978	8,678	2,400	13,306
December	970	1,768	6,789	2,400	11,927
Total	12,509	10,359	109,977	22,508	155,353

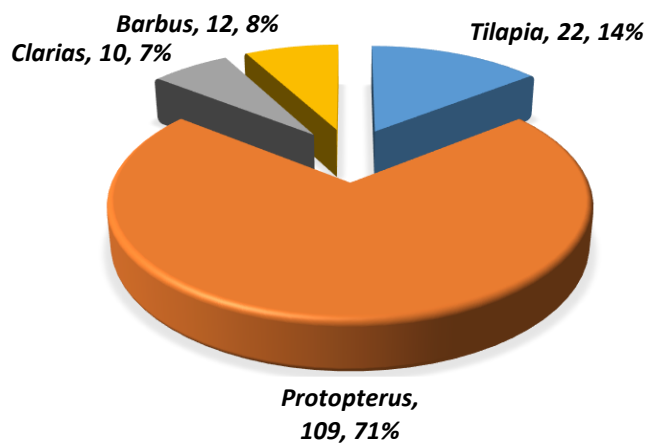


Figure 3. 8 Percentages catch by species composition in Lake Baringo in 2017

The species catch composition was dominated by *Protopterus aethiopicus* contributing 71% (109 metric tonnes) followed by *Tilapia spp* 14% (22 metric tonnes), *Barbus spp* 12% (12 metric tonnes) and *Clarias spp* with 7% (10 metric tonnes), figure 11 and table 5.

3.4 LAKE NAIVASHA FISHERY

The present fish population of Lake Naivasha comprises of the introduced species, largemouth bass (*Micropterus salmoides*), Common carp (*Cyprinus carpio*), *Tilapia zilli*, *Oreochromis leucostictus* and exotic rainbow trout (*Onchorhynchus mykiss*), *Barbus amphigramma*, Louisiana red swamp crayfish (*Procambarus clarkii*). The *Procambarus clarkii* and *Barbus amphigramma* are not under commercial exploitation currently in the lake.

Species composition in the catches from the lake has drastically changed since the year 2002 where total catches were dominated by the tilapiines. However, over the last thirteen years, Tilapiines contribution in catches has declined with the introduced *Cyprinus carpio* assuming greater prominence in the catches.

During the year under review, a total of 1,689 tons of fish with an ex-vessel value of Kshs.222,579 thousand were landed from Lake Naivasha. This was an increase of 58.7% in quantity and an increase of 57.9% in value compared to 2016 landings of 1,064 tons values at Kshs. 141,006 thousand.

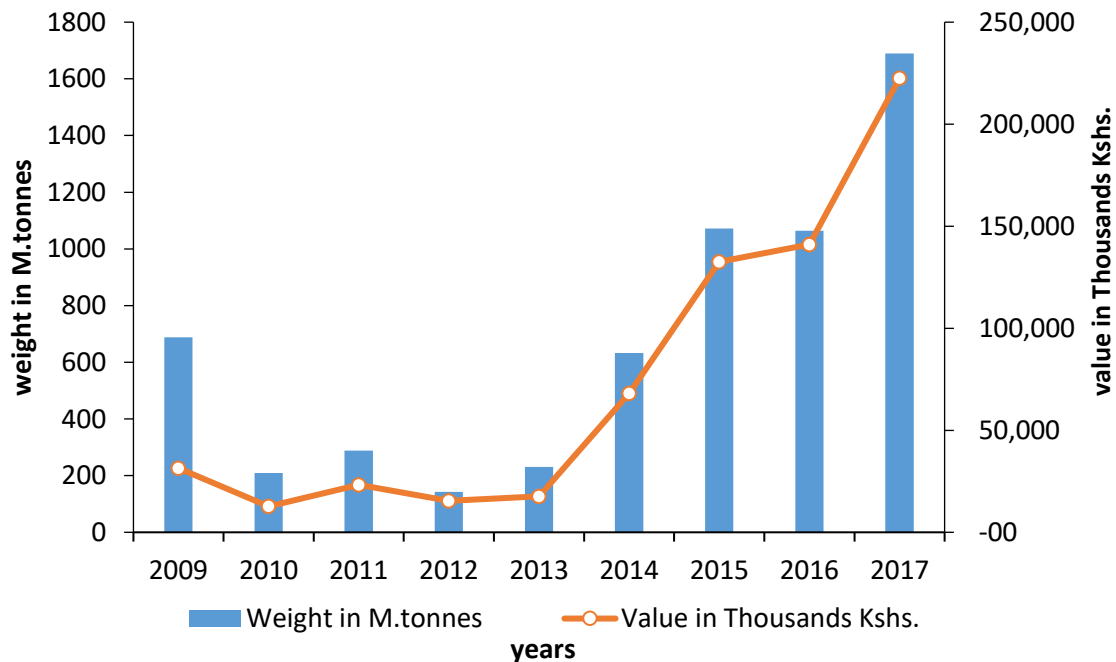


Figure 3. 9 Trends in annual fish landings from Lake Naivasha fishery 2009-2017

Table 3. 6 Lake Naivasha Monthly fish landings by Species, Weight and Value 2017

SPECIES	Black bass	Clarias	Tilapia niloticus	Tilapia others	Carp	TOTAL
JAN	391	79	65,684	152	26,737	93,042
FEB	395	125	78,243	131	25,052	103,946
MARCH	607	653	88,870	57	38,914	129,100
APRIL	616	196	77,705	59	23,084	101,660
MAY	759	187	71,135	51	29,039	101,171
JUNE	504	63	97,164	21	53,195	150,947
JULY	556	35	193,425	81	106,398	300,495
AUGUST	514	48	86,553	32	41,519	128,666
SEPTEMBER	1,119	102	124,106	67	34,821	160,215
OCTOBER	1,563	76	61,680	140	21,655	85,114
NOVEMBER	75	1,749	119,812	58	64,174	185,868
DECEMBER	634	32	69,775	25	77,833	148,299
TOTAL	7,733	3,344	1,134,152	873	542,421	1,688,523

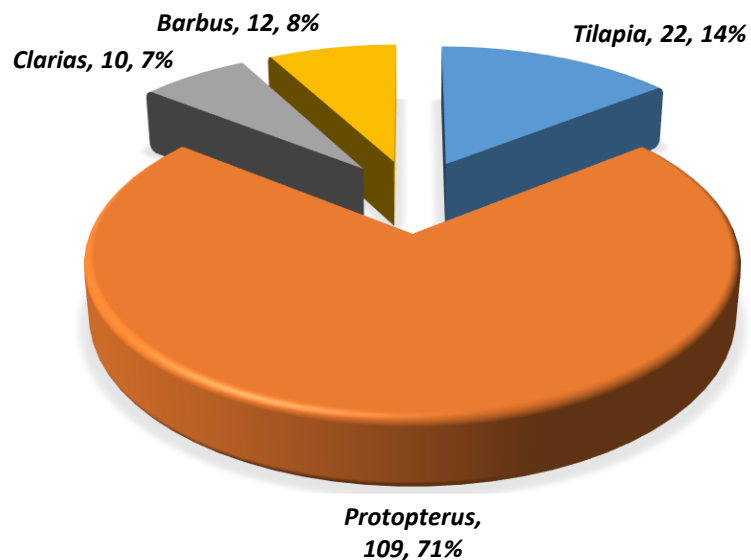


Figure 3. Species composition for Year 2017

3.5 LAKE JIPE FISHERY

Lake Jipe watershed is an important transboundary wetland ecosystem between Kenya and Tanzania.. The lake is fed by river Limu that originates from Mt Kilimanjaro slops and River Muvulani from Pare Mountains. The lake Outflows into River Ruvu. The lake Jipe is experiencing severe catchment degradation mainly due to anthropogenic activities that lead to eutrophication, siltation and pollution.

During the year 2017, a total of 112 metric tons with an ex-vessel value of Kshs 21,756 thousand were landed from Lake Jipe. This reflected an increase of 5.7% in quantity and corresponding increase of 16% in value compared to previous year's production of 106 metric tons valued at Kshs. 18,719 thousand.

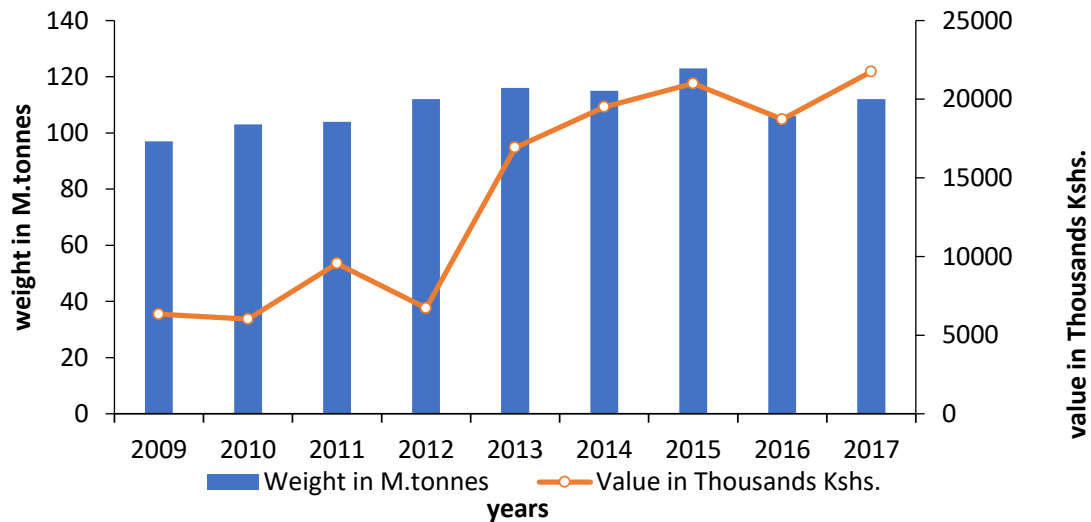


Figure 3. 10 Lake Jipe fish catch trends in metric tons 2009 – 2017

3.6 TANA RIVER DAMS FISHERY

In 2017, a total of 422 metric tons of fish with an ex-vessel value of Kshs 84,500 thousand were landed from the main fishery water bodies of the Tana River dams of Masinga, Kamburu, and Kiambere. This was 5% decrease in quantity and 17% increase in value compared to 2016 landings of 444 metric tons valued at Kshs 72,229 thousand.

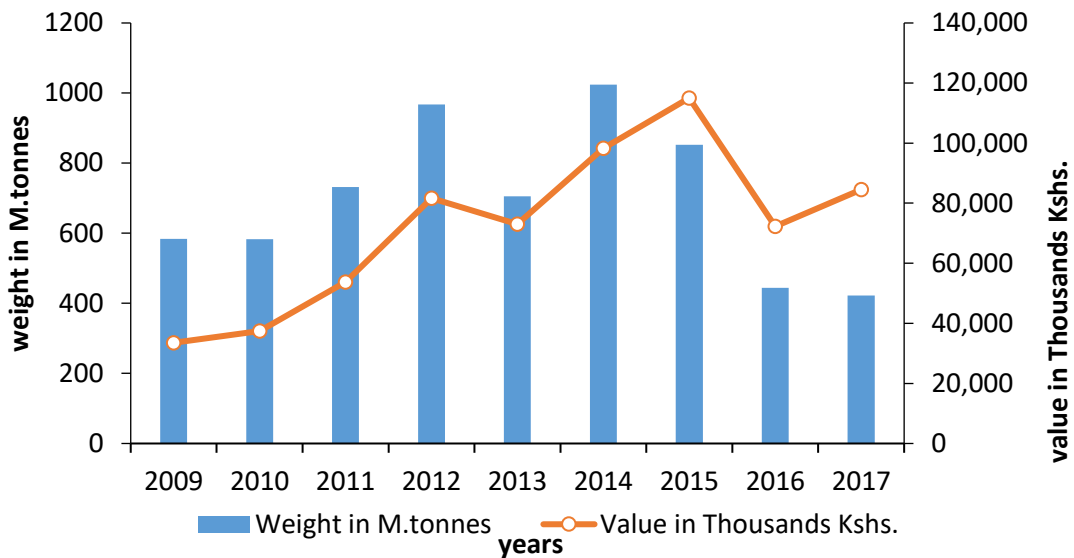


Figure 3. 11 Tana River Dams fish catch trends in metric tons 2009 – 2017

3.7 LAKE KENYATTA FISHERY

During the year under review a total of 45 tons of fish with an ex-vessel value of Kshs. 3,473 thousand were landed from Lake Kenyatta in Lamu County of the coast province. This was a 6.3% decline in quantity of the fish landed and a corresponding decrease of 23.8% in ex-vessel value compared with 2016 figures of 48 tons with an ex-vessel value of Kshs 4,560 thousand.

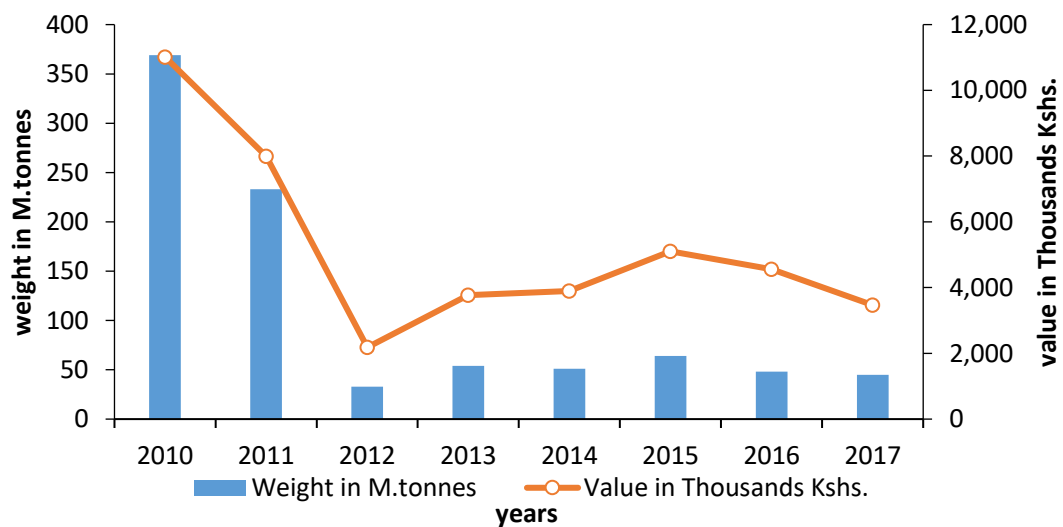


Figure 3. 12 Lake Kenyatta fish catch trends in metric tons 2008 – 2017

3.8 LAKE KANYABOLI FISHERY

Lake Kanyaboli is one of the satellite lakes of Lake Victoria and it is located in Siaya County. The fisheries of the lake are comprised of the following fish species: *Oreochromis niloticus*, *Protopterus aethiopicus*, *Haplochromis* and *Clarias spp.*

During the year under review, a total of 127 metric tons with an ex-vessel value of Kshs 26,346 thousand were landed from the lake. This was a 35% increase in quantity of the fish landed and a 167% increase in ex-vessel value compared with 2016 figures of 94 metric tons with a value of Kshs 9,870 thousand.

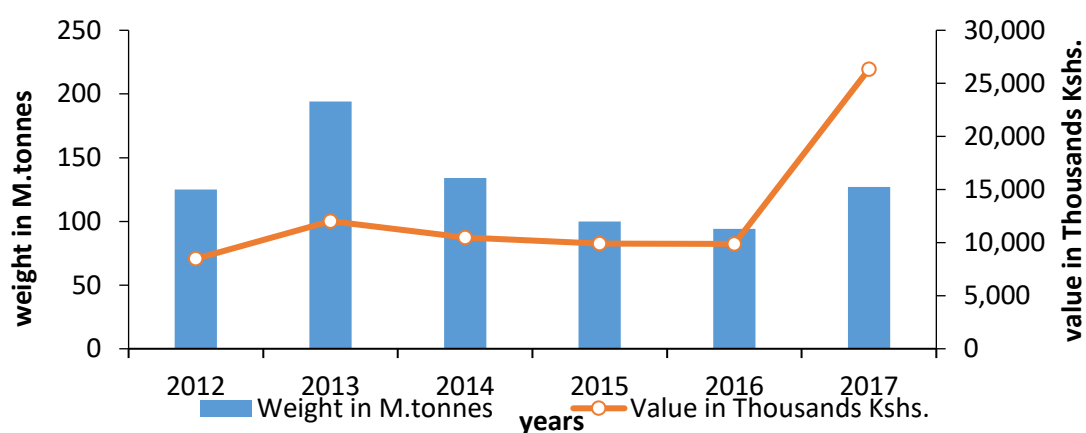


Figure 3. 13 Lake Kanyaboli fish catch trends in metric tons 2012-2017

Table 3. 7 Lake Kanyaboli fish catch in 2017

SPECIES	WT	VALUE
	(KGS)	(Ksh)
<i>Bagrus</i>	19279	1830171
<i>Barbus</i>	792	60478
Black bass	0	0
<i>Clarias</i>	498556	63173615
<i>Rastreonobola</i>	12534938	643930061
<i>Haplochromis</i>	181975	15280960
<i>Lates niloticus</i>	10063913	2818716971
<i>Momyrus</i>	801	90399
<i>Protopterus</i>	337757	38102137
<i>Synodontis</i>	137443	12437797
<i>Tilapia niloticus</i>	1979354	333249390
<i>Tilapia others</i>	189983	1381420
<i>Caradina niloticus</i>	5858508	221879878
<i>Schilbe mystes</i>	735	28295
TOTAL	31804034	4150161573

3.9 TURKWEL DAM

Turkwel Dam is one of the major Hydro Electric Power Station in Kenya. It is situated in North West of Kenya, in the border of Turkana, West Pokot and Pokot North Sub-Countries. The dam was constructed under the control of Kerio Valley Development Authority (KVDA) from 1986 to 1991 and is still under the management of KVDA. The State Department of Fisheries has been working with KVDA and Moi University on the introduction of fish in this Dam for commercial exploitation since 2006. The dam has an area of 66 square Km with a capacity of 1,641 cubic meters. Data of fish landings from the dam were recorded for the first time in 2013.

During 2017 a total of 35 metric tons of fish with an ex-vessel value of Kshs 9,905 thousand were landed from the dam. This was a 16.7% decrease in quantity and 9.7% increase in value of the fish landed compared with 2016 figures of 42 metric tons with a value of Kshs 9,030 thousand.

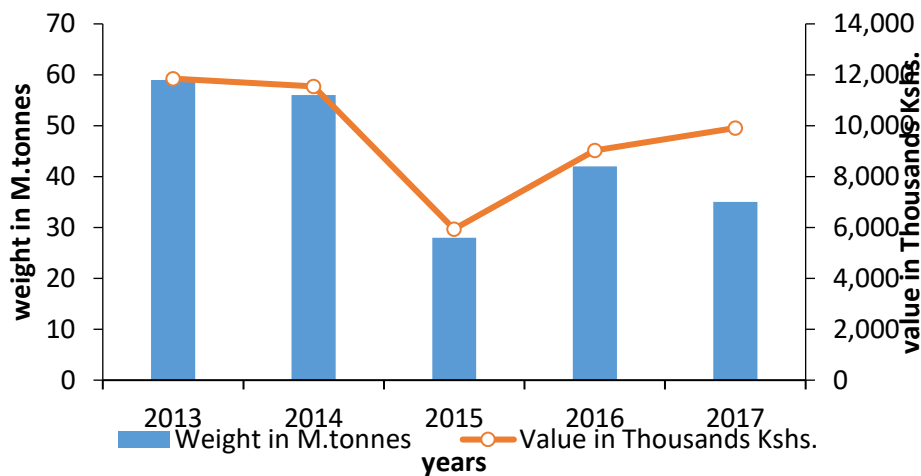


Figure 3. 14 Turkwel Dam fish catch trends in metric tons 2013-2017

3.10 TANA RIVER DELTA

Fresh water fish landings from Tana River delta in Tana River County during the year under review amounted to 115 tons with an ex-vessel value of Kshs 9,296 thousand. This was an increase of 475% in quantity of the fish landed coupled with a 372% increase in ex-vessel value compared to 20 tons with an ex-vessel value of Kshs 1,970 thousand landed in 2016.

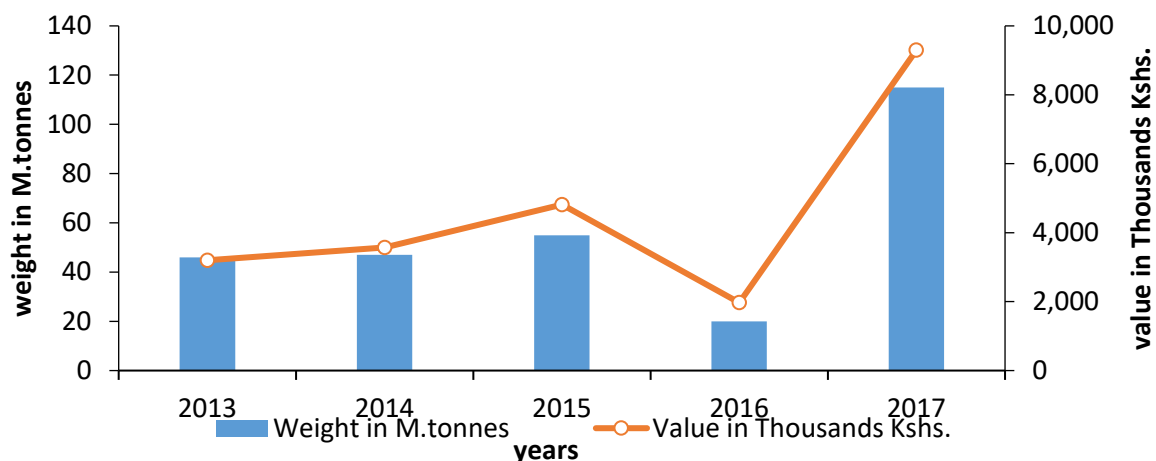


Figure 3. 15 Tana River delta fish catch trends in metric tons 2013-2017

3.11 RIVERLINE

During the year under review, fish landings from Riverline amounted to 10 tons with an ex-vessel value of Kshs 2,368 thousand. This was a decrease of 28.6% in quantity of the fish landed coupled with a decrease of 32.3% in ex-vessel value compared to 14 tons with an ex-vessel value of Kshs 3,500 thousand landed in 2016.

Table 3. 8 Riverine fish catch in 2017

Year	Quantity (MT)	VALUE (000 Kshs)
2015	11	4212
2016	5	3500
2017	10	2368

4.0 MARINE CAPTURE FISHERY

4.1 MARINE ARTISANAL LANDINGS

The artisanal marine production overtime (2006-2013) has remained fairly constant fluctuating between 7000 and 9000 metric tons. In 2013, the State Department for Fisheries Aquaculture and the Blue Economy introduced new approaches in data collection and estimation of fish landings. This new methodology has been applied from 2014 and subsequent years. Marine artisanal fishery capture over the reporting period decreased compared to 2017 estimated production. In 2017, a total of 23,286 Metric tons was landed with an ex-vessel of Ksh. 4.375 billion. The 2016, marine capture landings from artisanal fishery was 24,165 Metric tons with an ex-vessel value of Kshs. 4.691 billion. The catch represented a decrease of 3.6% production with a corresponding 8.7% decrease in the ex-vessel value.

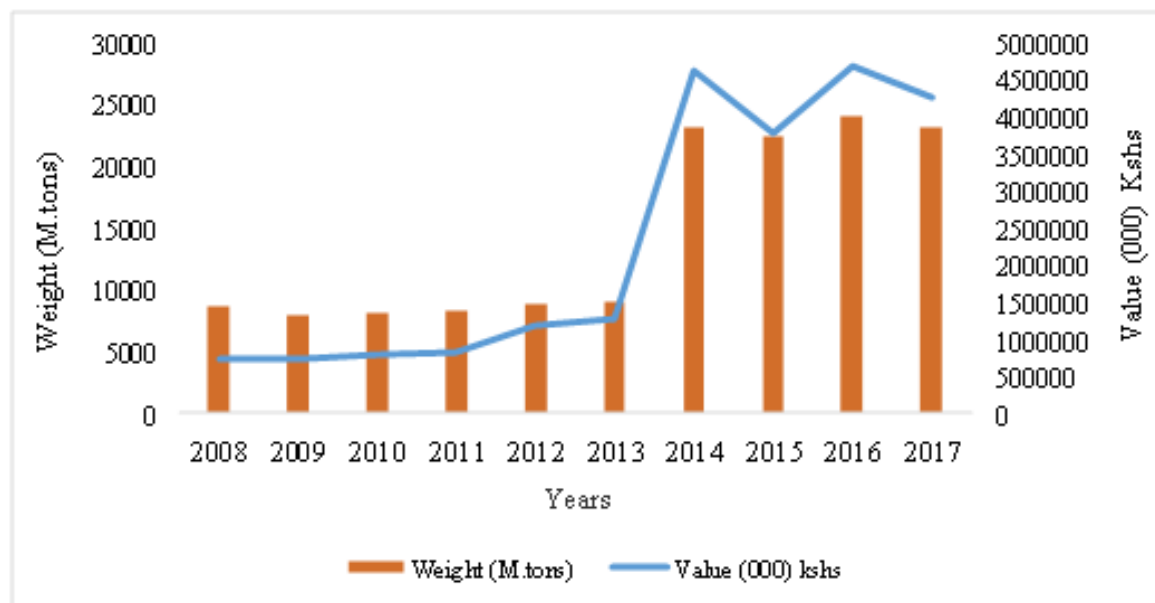


Figure 4. 1 Trends of marine fish production by quantity and value 2008-2017

In 2017, demersals dominated artisanal marine fisheries catch accounting for 55% (12,736 Metric tons) of the total landings. Pelagics contributed 25% (5,780 Metric tons) while Molluscs accounted for 10% (2,282 Metric tons). Crustaceans contributed 7% (1,647 Metric tons) and Sharks & rays 3% (842 Metric tons) (Fig 7).

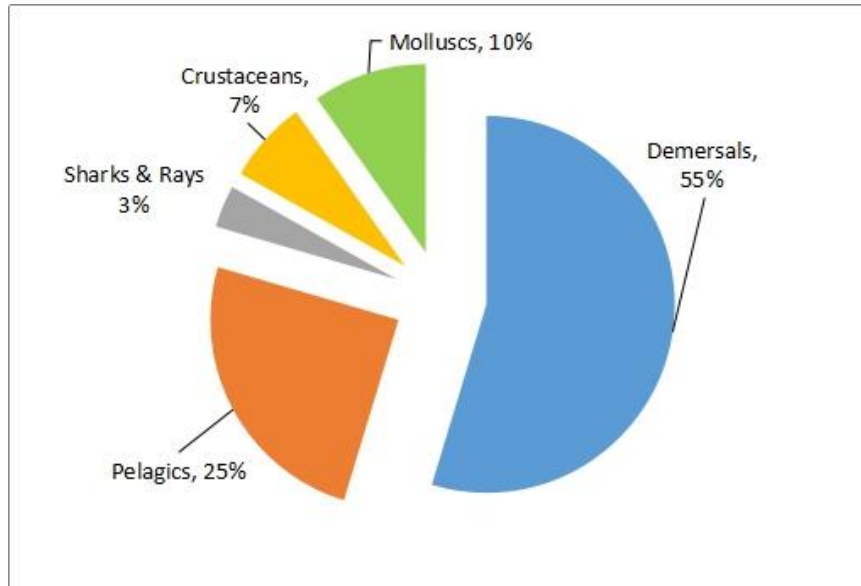


Figure 4. 2 Percentage contribution of marine fish species groups 2017

The trend for demersal fish showed an increase in 2017 compared to 2015 and 2016 (Fig 17). There was a drop in pelagics from 9,303 Metric tons in 2016 to 5,780 Metric tons in 2017 and in sharks and rays from around 1,700 - 1900 Metric tons between 2014 and 2016 to 842 Metric tons in 2017. There was an increasing trend through the four years 2014 to 2017 for both crustaceans and molluscs.

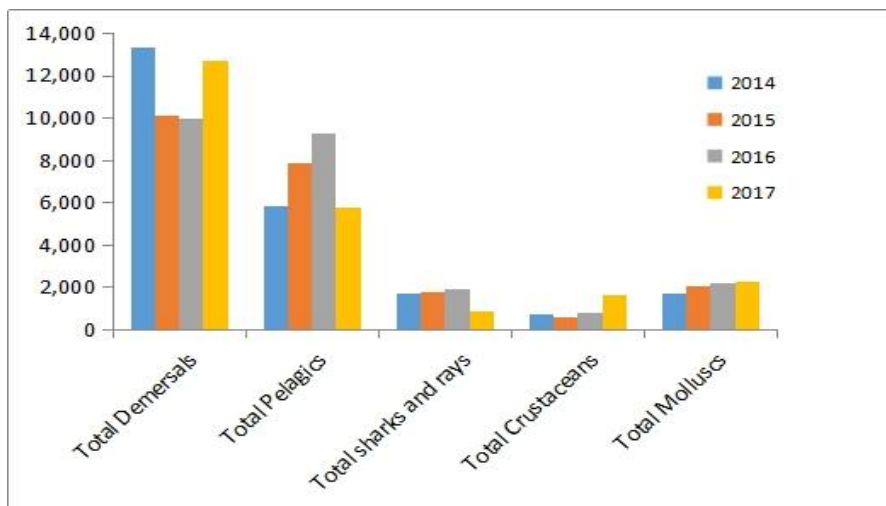


Figure 4. 3 Trends of landings of marine fish species groups 2014-2017

In the year 2017, the County that contributed the highest quantity of marine landings (Figure 18) was Kilifi County which registered a total value of 7,314 Mt (31.4 % of the total landings) with an ex-vessel value of Ksh. 1.556 billion (36.4% of the total ex-vessel value). Lamu county contributed 6,431 Mt (27.6%) with ex- vessel value of Ksh. 1.17 billion (27.3%), followed by Kwale county with 5,830 Mt (25%) with ex-vessel value of Ksh. 743 Million (17.4%). Mombasa contributed

2,278 Mt (9.8%) with ex-vessel value of Ksh. 626 Million (14.6%). The County that contributed the least quantity was Tana River county which registered a total value of 1433 Mt (6.2%) with ex-vessel value of Ksh. 185 Million (4.3%).

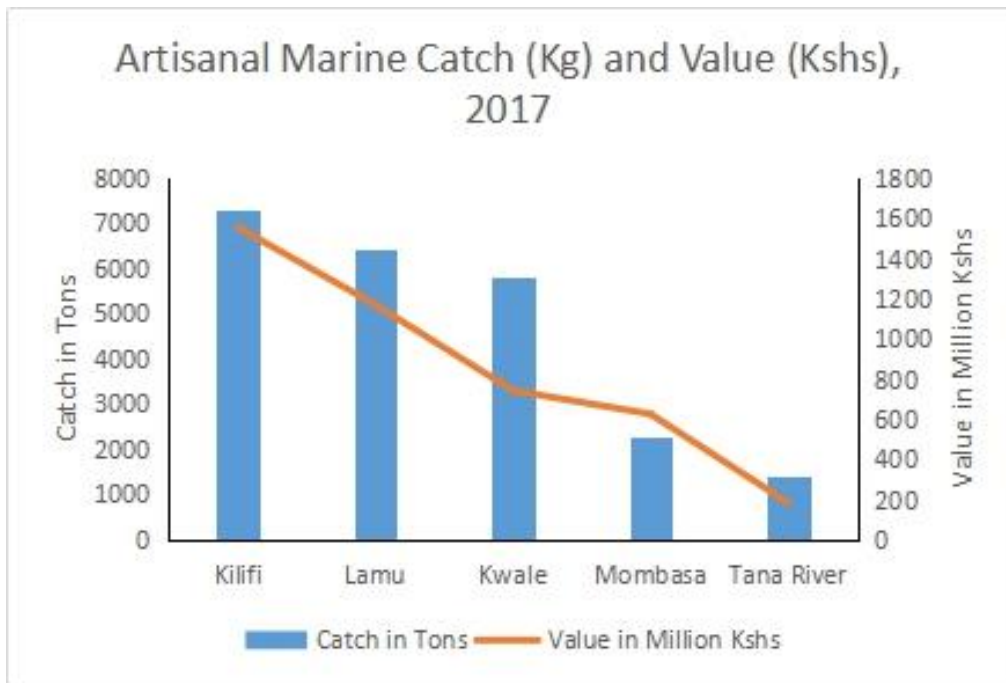


Figure 4. 4 Marine fish production by Quantity, Value and Counties 2017

Table 4. 1 Marine Fish Landings by Species, Weight and Value 2014 to 2017

SPECIES	Common Name	2015		2016		2017	
		Catch (Mt)	'000 Kshs	Catch (Mt)	'000 Kshs	Catch (Mt)	'000 Kshs
Demersals							
Siganidae	Rabbit fish	1,488	240,562	2,294	424,526	1,985	325,139
Lutjanidae	Scarvenger	1,687	290,809	1,640	275,157	1,476	233,327
Lethrinidae	Snapper	1,247	198,576	1,368	236,753	1,912	334,255
Scaridae	Parrot fish	846	103,516	1,269	159,364	1,588	189,654
Serranidae	Rock cod	694	106,912	483	77,868	608	144,041
Haemulidae	Black skin/grunters	399	54,189	414	59,404	852	126,494
Mugilidae	Mulletts	454	60,267	376	58,110	489	60,589
Acanthuridae	Surgeon fish/Unicorn	510	65,586	317	42,308	673	102,613
Nemipteridae	Threadfin breams	630	72,834	296	39,833	-	-
Mullidae	Goat fish	182	30,325	269	51,774	321	56,803
Mixed demersal	Mixed demersal	1,998	270,271	1,250	164,016	1,763	187,460
Gerreidae	Pouter	-	-	-	-	455	60,983
Scatophagidae	Streaker	-	-	-	-	157	15,332
Ariidae	Cat fish	-	-	-	-	457	54,376
TOTAL		10,135	1,493,847	9,974	1,589,113	12,736	1,891,066
PELAGICS							
Belonidae	Needle fishes	2,313	447,961	2,759	427,214	-	-
Scombridae	Little mackerels/Kingfish/bonito	1,215	174,201	1,798	379,180	2,077	411,329
Carangidae	Cavalla jacks/queenfish	795	141,985	1,186	230,220	899	147,141
Sphyrnidae	Barracudas	729	131,432	709	129,897	729	115,885
Hemiramphidae	Halfbeaks	632	71,619	883	109,711	-	-
Clupeidae	Sardines	649	113,493	618	69,622	543	62,344
Engraulidae	Anchovies	285	37,036	455	60,638	-	-
Istiophoridae	Sail fish	402	70,207	235	49,576	200	35,462
Xiphiidae	Swordfishes	158	24,191	160	35,786	43	11,328
Chirocentridae	Wolf Herrings	274	29,709	266	31,499	-	-
	Mixed Pelagics	392	57,158	235	37,575	768	106,951
Chanidae	Milk fish	-	-	-	-	228	29,231
Menidae	Moonfish	-	-	-	-	0	125
Congridae	Eel	-	-	-	-	4	466
Coryphaenidae	Dolphin fish	-	-	-	-	287	7,810
TOTAL		7,845	1,298,994	9,303	1,560,917	5,780	928,071
SHARKS & RAYS							
Carcharhinidae	Sharks	1,236	166,696	1,033	161,706	333	62,224
Dasyatidae	Sting Rays	525	58,596	880	112,622	175	29,135
Lamnidae	Mackerel Sharks	-	-	-	-	266	44,355
Mixed species		-	-	-	-	-	-
Myliobatidae	Manta Rays	-	-	-	-	64	10,703
Rhincodontidae	Whale Sharks	-	-	-	-	0	53
Rhinobatidae	Guitarfishes/Skates	-	-	-	-	-	-
Sphyrnidae	Hammerhead sharks	-	-	-	-	4	585
Stegostomatidae	Zebra sharks	-	-	-	-	-	-
TOTAL		1763	225,422	1,913	274,328	842	147,055
CRUSTACEANS							
Palinuridae	Lobsters	263	343,600	390	651,024	300	382,870
Penaidae	Crabs	145	70,274	163	90,161	584	249,399
Portunidae	Prawns	213	60,637	220	146,480	763	284,675
TOTAL		621	474,512	772	887,664	1,647	916,943
MISCELLANEOUS							
Octopodidae	Octopus	1832	258,926	2,063	349,414	1,469	244,389
Loliginidae	Squids	147	32,853	64	15,447	661	99,254
Sepiidae	Cuttlefish	47	8,994	70	8,671	-	-
Holothuridae	Beche-de-mers	19	2,158	6	4,986	86	47,692
	Oysters	-	-	-	-	41	5,970
	Marine shells	-	-	-	-	25	585
TOTAL		2,045	302,930	2,203	378,518	2,282	397,891
TOTAL MARINE		22,407	3,795,575	24,165	4,690,541	23,286	4,281,026

Table 4. 2 Marine Fish Landings by Species, Weight and Value per County

County	Kilifi		Kwale		Lamu		Mombasa		Tana River		Total	
	Catch (Kg)	Value	Catch (Kg)	Value	Catch (Kg)	Value	Catch (Kg)	Value	Catch (Kg)	Value	Catch (Kg)	Value
Marine fishes												
Demersals	3,072,794	650,276,803	2,641,647	331,961,234	5,085,819	516,452,730	1,014,119	281,118,283	921,547	111,256,937	12,735,927	1,891,065,987
Pelagics	2,784,497	514,663,115	1,849,992	205,708,226	536,627	99,147,028	456,698	93,259,536	151,904	15,292,740	5,779,719	928,070,645
Sharks and rays	437,301	72,986,706	158,335	26,426,530	49,757	8,304,491	165,455	34,215,384	30,688	5,121,883	841,535	147,054,994
Totals	6,294,592	1,237,926,624	4,649,975	564,095,990	5,672,203	623,904,249	1,636,272	408,593,203	1,104,139	131,671,560	19,357,181	2,966,191,625
Crustacean	333,343	169,357,416	258,496	63,499,831	526,025	480,123,034	456,657	176,665,032	72,666	27,298,130	1,647,186	916,943,443
Molluscs	685,654	149,109,790	921,531	115,635,960	233,005	66,118,605	184,884	41,212,200	256,559	25,814,444	2,281,633	397,890,998
TOTALS	7,313,588	1,556,393,830	5,830,001	743,231,781	6,431,233	1,170,145,888	2,277,813	626,470,435	1,433,364	184,784,133	23,286,000	4,281,026,067

4.2 MARINE INDUSTRIAL LANDINGS

4.2.1 Trawling

Industrial trawl fishery is categorized as shallow water fishery operated within internal waters of Malindi and Ungwana bays in the and deep-water fishery 5nm from the baseline. During the year under review, four industrial trawlers were licensed for shallow water prawn trawl fishery. The target species is prawns, a high value resource mainly for export market but also consumed locally. The fishery is seasonal and fishing was conducted from April to October. Three of the vessels applied for licenses to fish in areas beyond 12nm during the closed season (November to March). In addition, two other vessels were licensed to fish in areas beyond 5nm from the baseline in the year under review.

4.2.2 Shallow water prawn trawl fishery

Prawn trawling in Kenya has been in operation for over four (4) decades. From 2010, the number of vessels to operate in the 3-5nm zone of the prawn management area was reduced to only 4, hence the fishing capacity for the shallow water prawns was maintained to a maximum of 4 in 2017.

The production from shallow water prawn trawl fishery was estimated at 346 tons comprising of prawns, assorted fin fish species, and others mainly comprised of octopus, squids, cuttlefish, lobsters and crabs. This was an increase compared to the 429 metric tons reported in 2016. There was an increase in production in terms of catch and value from April to May. Thereafter, the production reduced significantly and it remained fairly constant in the months of June-October. The month that registered the highest value in terms of catch was May at 107 Tonnes (Table 11).

Table 1: Catch, Effort, Species Composition and value of Landings in 2017

Fishing Effort

NO. OF VESSELS	3
NO. OF FISHING DAYS	700
NO. OF NETS	3
FISHING DISTANCE(NM)	2.0-13.0
FISHING DEPTH(M)	7.0-280

Species Composition and value of landings

During the year under review, a total catch of 346 tons comprising of prawns, assorted fin fish species, others assorted species caught as bycatch with an ex-vessel value of Kshs 115.5 Million were landed by the industrial trawlers (Table 11). The other assorted species consisted of octopus, squids, cuttlefish, lobsters and Crabs. There was landed quantities of catch that was not retained and regarded as trash from fishery.

Table 4. 3 Monthly fish catch (kgs) from the shallow water prawn fishery, 2017

Months	Prawns (Kg)	Fin Fish (Kg)	Others (Kg)	Total catch (Kg)	Total Value (Kshs)
April	148	26695	70	26913	5489700
May	11600	89675	16	101291	28379000
June	15229	42577	0	57806	22221050
July	12294	30687	0	42981	17202000
August	11151	24339	0	35490	14903700
September	9016	50416	0	59432	18197600
October	6667	15448	0	22115	9089900
Grand Total	66105	279837	102	346044	115,486,950

The month of May registered the highest catch at 101.3 tons valued at 28.4 Million Kshs whereas the month that recorded the lowest value was October at 22.1 Tons valued at 9.1 Million Kshs (Table 11).

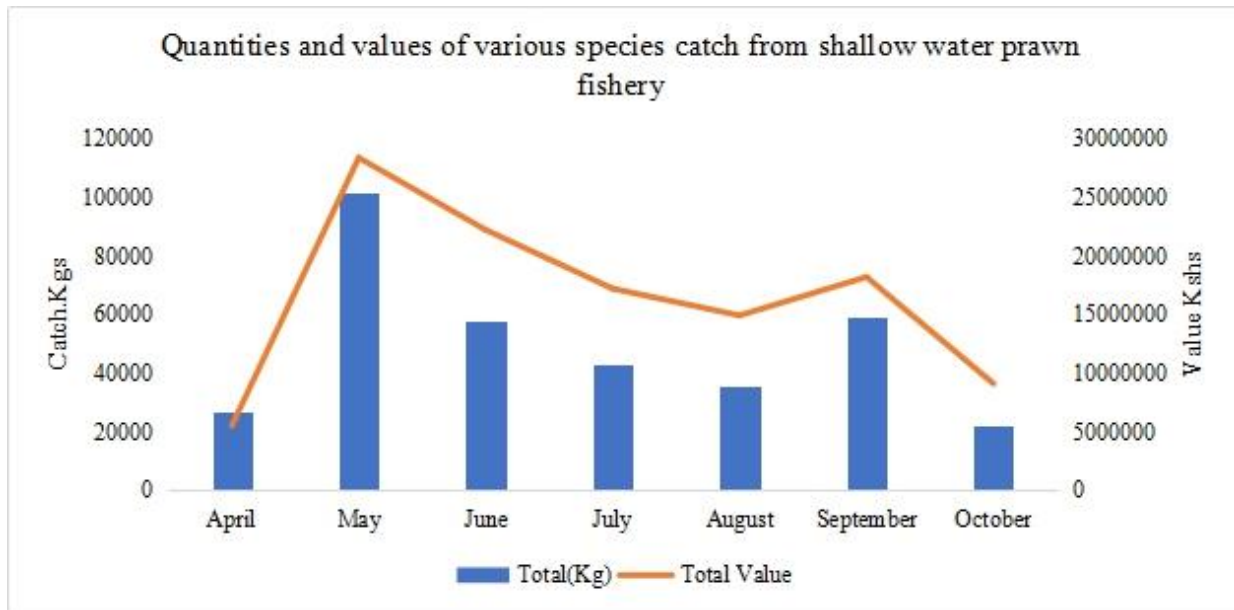


Figure 4. 5 Monthly trends in catch levels and value from the shallow prawn trawl fishery, 2017

4.2.3 Deepwater trawl fishery

Catch, Effort, Species Composition and Value of Landings in 2017

Fishing Effort

Two vessels were licensed for Deepwater trawl fishery in 2017. The vessels fished for a total of 95 days with an average of one net per vessel. The fishing distance 5.4- 24 nm from the baseline at a depth of 14-330m off Malindi Ungwana bay. The vessel fished for 3 months, January, November and December.

Species Composition and Value of Landings in 2017

During the year under review, a total catch of 41.6 tons comprising of prawns, assorted fin fish species, others and trash valued at Kshs 9.1 Million were landed by the industrial deepwater trawlers (Table 12). The 'other species consisted of octopus, Squids, cuttlefish, lobsters and Crabs. The month of December recorded the highest production at 21.1 Tons with an ex-vessel value of Kshs 4.6 Million whereas the month that recorded the least was January with < 1 tons with an ex-vessel value of Kshs 42,200 (Figure 20).

Table 4. 4 Monthly fish catch from the trawl fishery off Malindi-Ungwana Bay (deep sea), 2017

Months	Prawns (Kg)	Fin Fish (Kg)	Octopus (Kg)	Others (Kg)	Total Weight (Kg)	Values (Kshs)
January	38	40	0	0	78	42200
November	0	13523	0	6863	20386	4420350
December	167	15504	0	5417	21088	4605360
Grand Total	205	29067	0	12280	41552	9,102,110

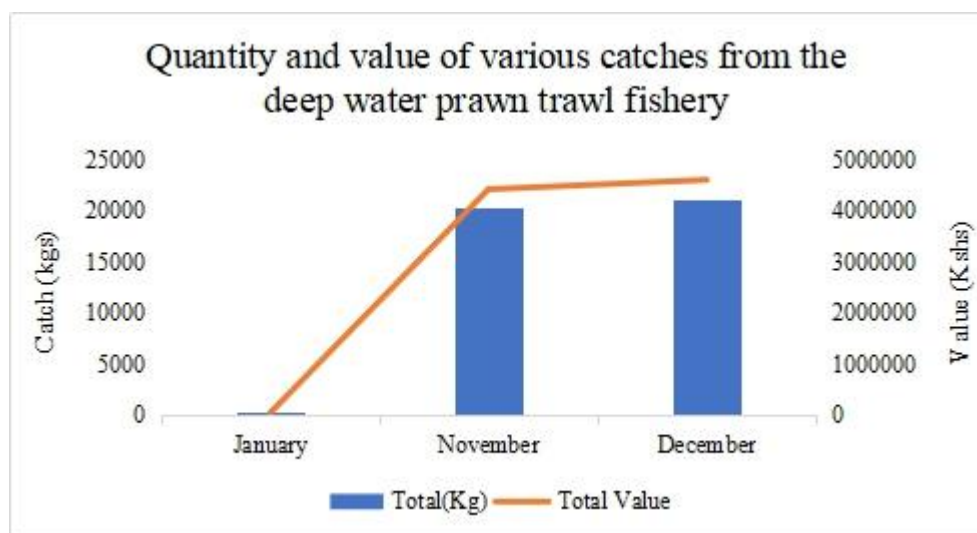


Figure 4. 6 Monthly trends in catch levels and value from the trawl fishery off Malindi-Ungwana Bay (deep sea), 2017

4.3 Industrial longline data

4.3.1 Longlining

In 2017, only one industrial longline vessel was licensed to fish for tuna and tuna like species from the month of July. The fishing effort was based on number of days fished, the number of hooked deployed, average length of setline and hours fished per set. During the year under review the vessel fished for a total of 98 days, with 3,068 hooks. The average setline was 126412 and the average fishing hours per set was 15.3.

Table 4. 5 Monthly fish catch from Longline offshore fishery, 2017

Species	Month						Total (Kgs)	Value (000')Kshs
	July	August	September	October	November	December		
Yellow Tuna	45	297	380	2,260	6,169	5,265	14,416	4,408
Albacore	208	6,641	7,180		206	458	14,693	4,325
Bigeye Tuna		955	874	2,097	3,601	3,042	10,569	3,171
Other assorted	122	4,419	1,472	945	3,397	190	10,545	2,636
Hammer head	528	2,417	409				3,354	839
Black marlin	104		305	494	1,013	343	2,259	566
Blue Shark				463	1,137	662	2,262	565
Swordfish	77	650	910	21	483	111	2,252	1,126
Blacktip Shark				355	269	20	644	161
Sail Fish	49	23			313	387	772	193
Grand Total	1133	15,402	11,530	6,635	16,588	10,478	61,766	17,988

A total of 62 tons valued at Kshs.17.988 million was landed by the one long liner compared to the catch of 150.4 tons recorded in 2016 valued at Kshs. 75.2 million (Table 12). The monthly landings showed most of the catch was caught in the months of August (15.4 tons) and November (16.6 tons) and lowest catch was in the month of July (Figure 27).

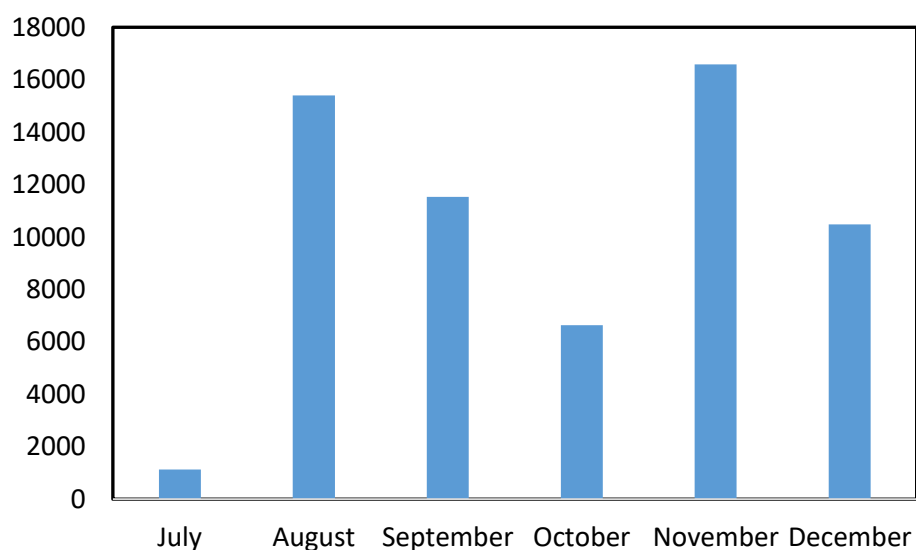


Figure 4. 7 Monthly fish catch from Longline offshore fishery, 2017

5.0 AQUACULTURE (FISH FARMING)

5.1 INTRODUCTION

Freshwater aquaculture development in Kenya in recent years has been fast growing. Compared to an annual production of about 1,000 MT in 2006, production had increased to an estimated 18,656 MT in 2015. This has been mainly the result of a nationwide fish farming mass campaign as part of the Economic Stimulus Programme launched by the Government of Kenya (GoK) during the period 2009-2013. As a result, the area of fishponds had increased from 220 ha in 2009 to 1,873 ha in 2015 (introducing 7,700 new ponds) and other support provided along different aquaculture value chains. The main produced species were Nile tilapia (79%), African catfish (15%), Rainbow trout (4%) and Common carp and Ornamental fish (2%). Mariculture production of seaweeds is being practiced commercially, mainly at Kibuyuni in south coast and is planned for uptake in other areas, as it has demonstrated that seaweed production can succeed in Kenya.

Nevertheless, there is a lack of reliable data as regards aquaculture production at County and National level and estimates from different sources range from 10,000 to about 40,000 MT per year. Aquaculture sector is gaining momentum as production from capture fisheries decreases and demand increases due to population growth. There is already a significant gap (250,000MT in 2015), between the projected demand and production of fish, which is expected to increase and is projected to be 360,000 MT/year by 2025. This lack of supply has resulted in a continuous decline of per capita average consumption, due to rising prices and limited availability. This shows the significant domestic growth potential of the aquaculture sector. The import of frozen fish, predominantly from China, has grown rapidly from 2,664 MT in 2011 to 5,853 MT in 2015 to fill the gap in local supply, since fish catches from the wild are declining and pond farmers are not able to supply consistent quantity and quality. The GoK is looking into ways of promoting aquaculture and using fish products for food relief programmes as a means to enhancing food security and improving health.

In 2009, the Government of Kenya implemented an ambitious aquaculture development programme under Economic Stimulus Programme (ESP) over a four-year period (2009-2013) at a cost of USD 40 million. The programme supported construction of ponds (300 in 160 constituencies), improved infrastructure for fish feeds and seeds, and construction of four fish processing facilities in four regions (Nyeri, Meru, Migori and Kakamega) to serve aquaculture farmers within and the surrounding Counties. Part of the funds was used to map zones of high

aquaculture potential in which viable investments can be promoted. In total, 48,000 fishponds were constructed under the programme. During early stages, it supported as well aquaculture in reservoirs that were constructed by the programme before it was abandoned later due to high investment costs and non-availability of lands for the programme to construct man-made reservoirs to be dedicated for aquaculture. The programme supported the provision of subsidized feeds and seeds for the newly established ponds. It is worth mentioning that farmers contributed land only, while the ESP supported digging of the pond. After the devolution (2013), fish farming was one of the devolved functions and some of the Counties abandoned the programme as they focused resources in areas which were of priority. At present, several ponds are out of production due to issues with quality of feeds and fingerlings, as well as poor selection of sites for some of the ponds. Some of the fingerlings farms, supported by the programme are getting out of business in certain areas due to low demand. This has consequently led to the observed decline in fish production from aquaculture.

5.2 Aquaculture Production

In 2017, fish farming production was 12,407 metric tons with a farm gate value of 3,692 million Kenya Shillings compared to 14,952 metric tons valued at 4,254million Kenya shillings in 2016. This production reflected a decrease of 17.4% in Quantity and a decrease of 13.2% in value. Total production from Mariculture was 51 Metric Tons with an ex-vessel value of 1,530 thousand Kenya shillings. This was 45.7% increase in Quantity and 45.7% increase in value compared to 2016 figures of 35 Metric tons valued at 1,050 thousand Kenya shillings. During the year total production from cage farming was 227,589 Kgs valued at Kshs 79,655,975 (Table 13). Over the last five years, fish production has increased from 19,585 metric tons produced in year 2011 to the production of 24,096 metric tons in 2014 from which production has declined to the current 12,356 (figure 22).

Table 5. 1 Fish landings by Weight and Value from Aquaculture, mariculture and Cage culture 2015-2017 (reported data).

	Aquaculture	Mariculture	Cage culture
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years	weight in M.tonnes	Value in '000 Kshs.	weight in M.tonnes	Value in '000 Kshs.	weight in M.tonnes	Value in '000 Kshs.
2015	18,656	5,014,000	0	0	0	0
2016	14,952	4,253,844	35	1,050	-	-
2017	12,356	3,691,046	51	1,530	228	79,656

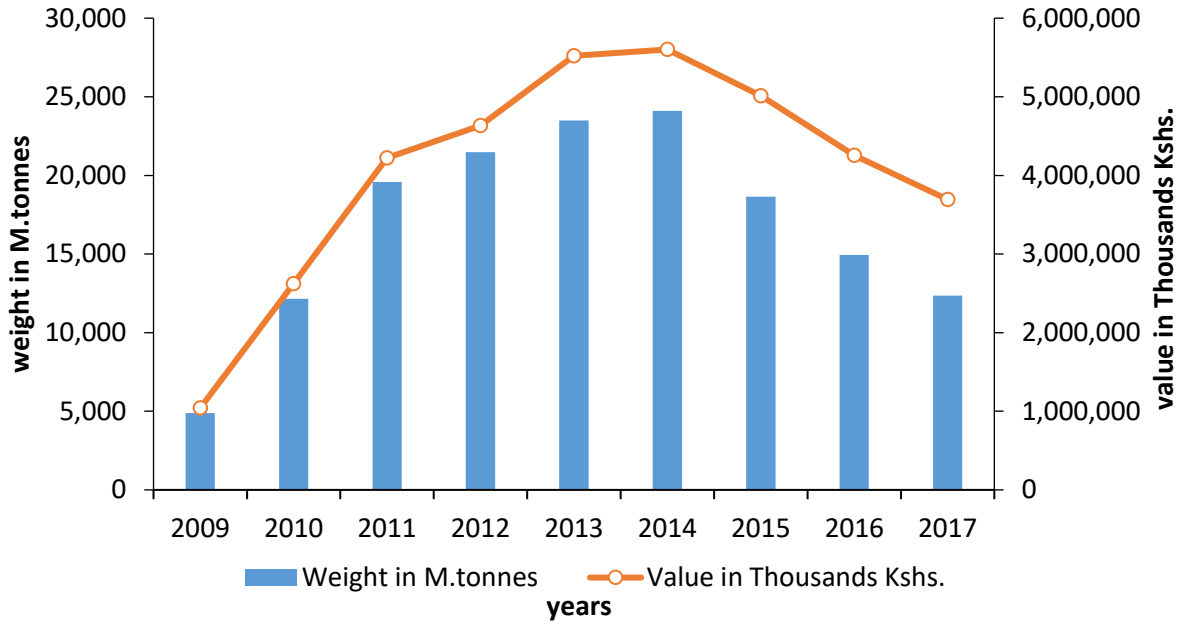


Figure 5. 1 Aquaculture production for last five years (2009-2017)

6.0 EXPORTS OF FISH AND FISHERY PRODUCTS

During the period under review, a total of 3554 metric tons of fish and fishery products were exported earning the country Kshs. 2.25 billion in foreign exchange. This was a decrease of 3,855 metric tons from the previous year of 4686 metric tons. This decline was 24%. The main reason for the significant drop was occasioned by the decline of production in the tuna processing establishment and closure of three Nile perch processing plants based in Kisumu and Nairobi. The leading export products were 2007 metric tons of frozen Nile Perch fillets valued at Kshs 1472 million, 858 metric tons of frozen Octopus valued at Kshs 396 million, 161 metric tons of Marine shells valued at 10.5million and 68MT frozen whole prawns valued at Kshs 82.4 million. The main markets for the marine ornamental fishes were the EU, USA, China and Israel (Figure 31).

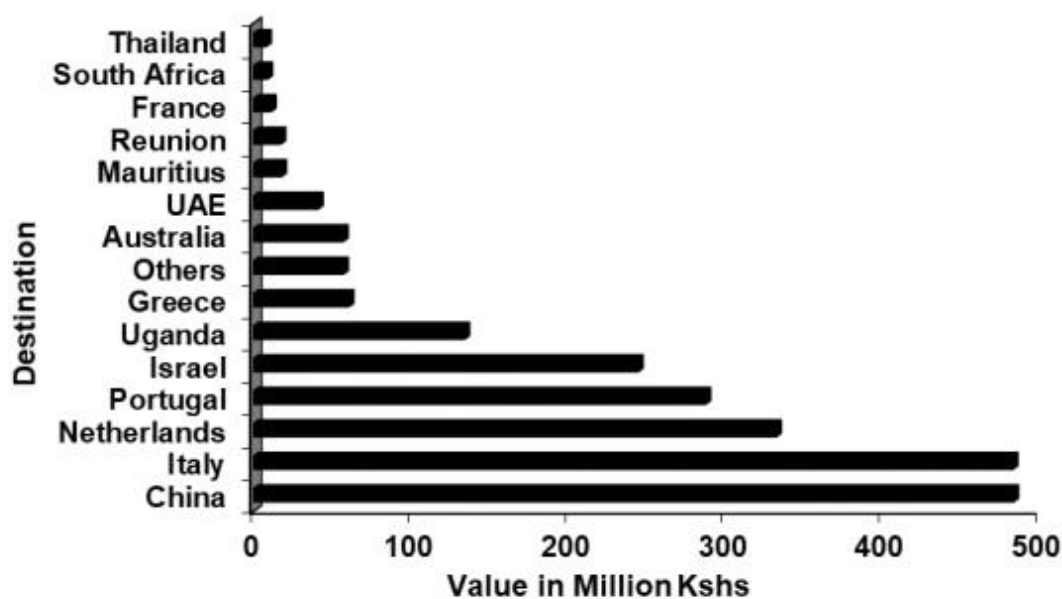


Figure 6. 1 Exports Products by destinations- 2017

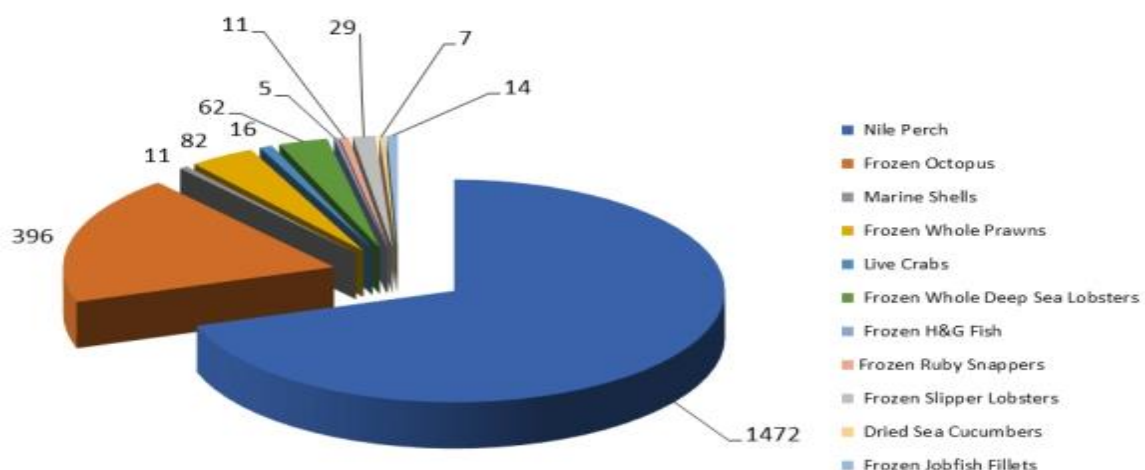


Figure 6. 2 Export's value of fish by product type in millions of Kshs. during 2017

By product types, Nile Perch was the leading export product 2007 million Kshs representing 56.5% of the total export value from Kenya. Octopus, marine shells and fozen whole prawn represented 24.1%,4.55% and 1.92% of the export respectively for 2017. Other export products live crabs, frozen whole lobster and frozen H&G fish representing 1.14, 0.9% and 0.69% of the export values respectively. The rest of the products fetched 4% of the export value (Figure 32).

Table 6. 1 Exports of Fish and Fishery Products 2017

Commodity	M. Tons	000Kshs	% Quantity	% Value
Nile Perch	2007	1,471,665	56.47	65.30
Frozen Octopus	857.9813	396,157	24.14	17.58
Others	213.0433	100,182	5.99	4.45
Marine Shells	161.5725	10,596	4.55	0.47
Frozen Whole Prawns	68.094	82,431	1.92	3.66
Live Crabs	40.685	16,354	1.14	0.73
Frozen Whole Deep-Sea Lobsters	32.1435	61,924	0.90	2.75
Frozen H&G Fish	24.5536	5,058	0.69	0.22
Frozen Ruby Snappers	23.421	11,382	0.66	0.51
Frozen Slipper Lobsters	21.253	28,681	0.60	1.27
Dried Sea Cucumbers	21.1535	6,719	0.60	0.30
Frozen Jobfish Fillets	18.675	13,797	0.53	0.61
Frozen Fish Portions	17.98	5,529	0.51	0.25

Frozen Spiny Lobsters	16.929	27,112	0.48	1.20
Frozen Fish Fillets	15.49	4,762	0.44	0.21
Live Lobsters	14.163	11,294	0.40	0.50
TOTAL	3554.138	2,253,644	100.00	100.00

6.1 Marine Aquarium exports

6.1.1 Aquarium fish

In 2017, 323,691 aquarium fish valued at Kshs. 22,866,904 were exported compared with an average of 292,270 fish exported in 2016. This represented a 10.8% increase in the volumes of aquarium fish exported. Twenty species made up 60.2% of the total exports, with the top 4 species being *Paracanthrus hepatus*, *Centropyge acanthops* and *Pseudanthias squamipinnis* as shown in Annex 1. The (Figure 33) gives the annual trend of aquarim fish exports and value from 2010-2017

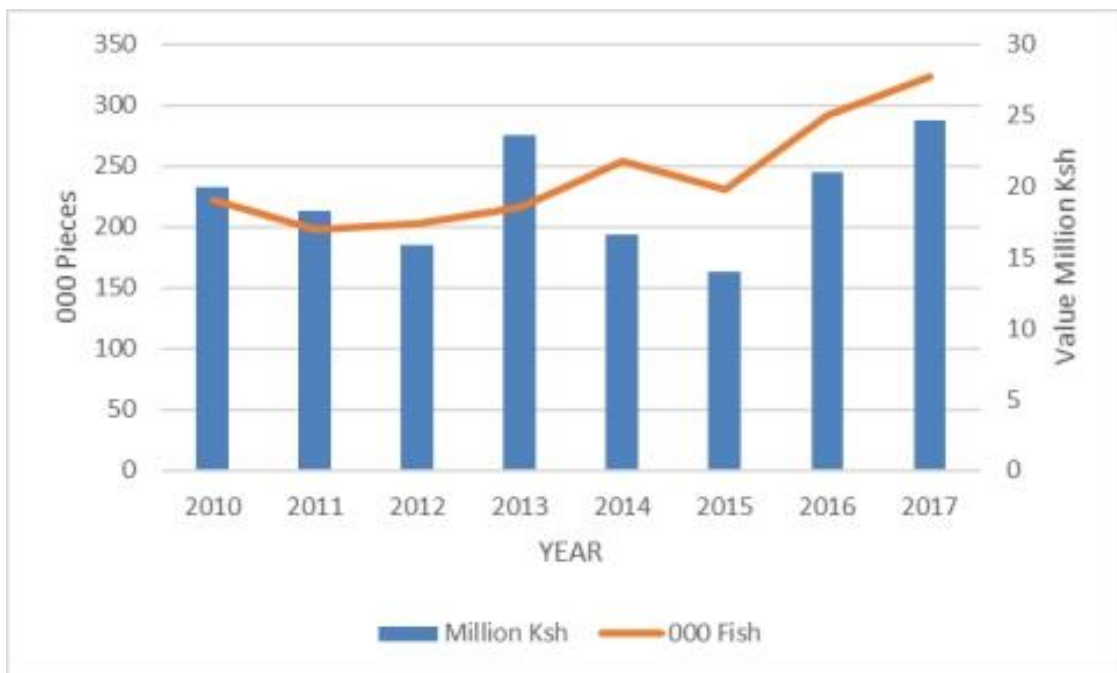


Figure 6. 3 Annual trends of aquarium fish exports in numbers and value in during 2010 - 2017.

6.1.2 Invertebrates

The number of marine invertebrates exported in 2017 was 176,130 which was an increase of 20.4% from compared to 146186 invertebrates exported in 2016 (Figure 34). The export value however increased to 5.8 million Kshs. compared to 4.7 million Kshs. in 2016.

Twenty species made up 91.1% and 81.2% in volume and value of the invertebrates' exports, with the top 20 species being *as in* (Annex 2). The monthly trends of the exports showed a higher volume in the first half of the year with the latter part of the years having monthly exports of less than 10,000 pieces except for October. The monthly fluctuation in exports for the invertebrates is however more than that of the aquarium fish (Figure 34).

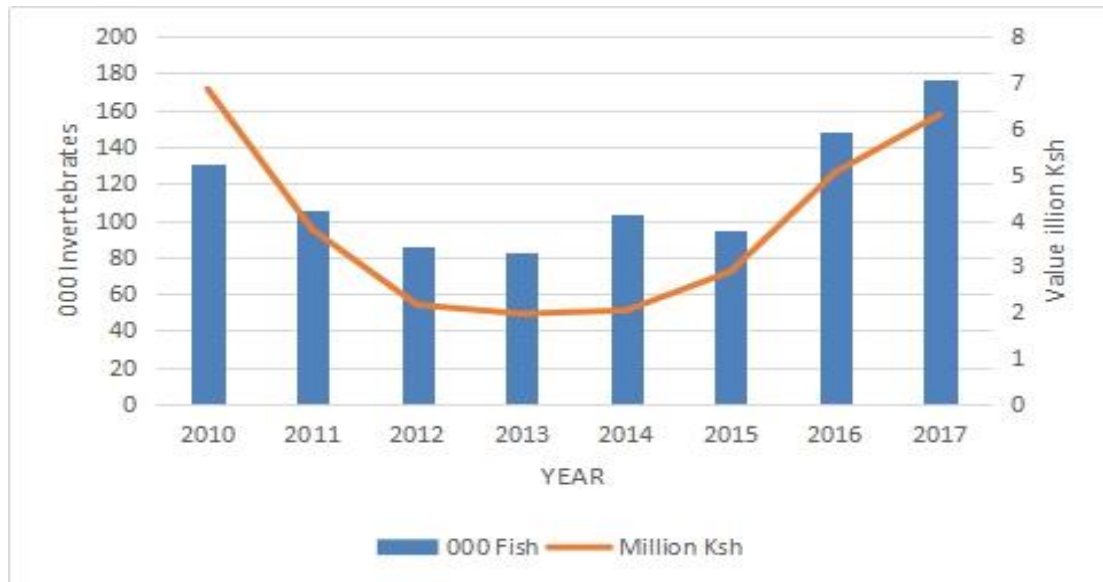


Figure 6. 4 Annual trends in the marine invertebrates' exports in numbers and value during 2010 – 2017

7.0 IMPORTS OF FISH AND FISHERY PRODUCTS

In 2017, Kenya imported 19,127 metric tons of fish and fishery products worth Kshs 1.57 billion (Table 15). The value of imported fish was 0.6 billion Kenya shillings less than the exported fish. In terms of quantities in weight, the imports were 9.2 times the exported volume. This means that fish Kenya exported high priced products compared to the low-priced imports. The imports were mainly composed of *Oreochromis niloticus* 8829 metric tons (46.16%) of the total fish and fishery products imported during the year. These were followed by frozen Mackerels with 4346 metric tons which was 22.7%. 843 metric tons fish waste, fish feed and tuna fish meal all the three used for fish feed production products imported composing 4.4%, total imports (Fig. 35). The imports originated largely from Asian countries, notably China, Japan, Korea and Vietnam with most of the *Oreochromis niloticus* was imported from China. Uganda and Tanzania were the second and fourth most important countries we import fish from respectively (Fig 36).

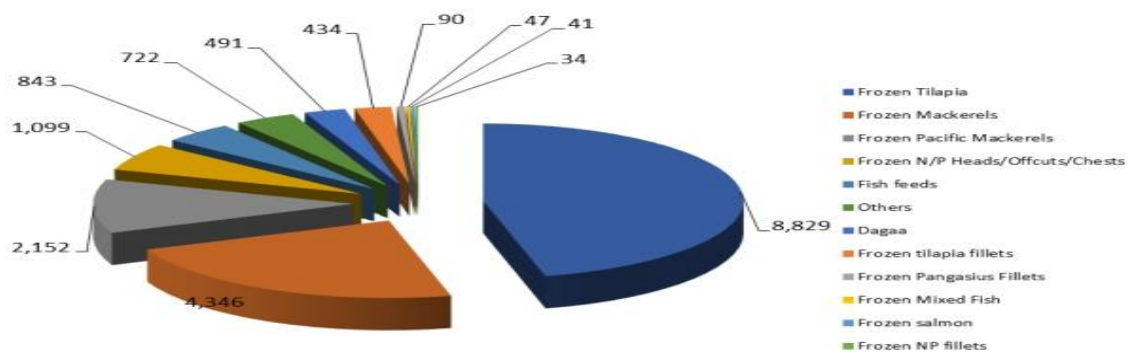


Figure 7. 1 Import of fish and fish products by quantities (MT) for 2017

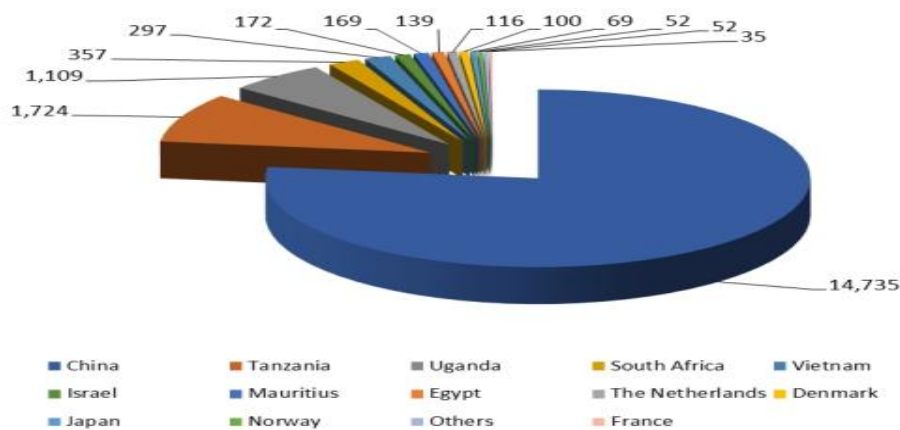


Figure 7. 2 Fish imports in tons by Country of origin for 2017

Table 7. 1 Imports of Fish and Fishery Products 2017

Product	Quantity (M. Tons)	Value ('000Kshs)	% Quantity	% Value
Frozen Tilapia	8,829	670,556	46.16	42.75
Frozen Mackerels	4,346	361,126	22.72	23.02
Frozen Pacific Mackerels	2,152	174,127	11.25	11.1
Frozen N/P Heads/Offcuts/Chests	1,099	58,994	5.74	3.76
Fish feeds	843	63,744	4.41	4.06
Others	626	69,066	3.27	4.4
Dagaa	491	1,203	2.56	0.08
Frozen tilapia fillets	434	126,937	2.27	8.09
Frozen Pangasius Fillets	90	9,218	0.47	0.59
Frozen Mixed Fish	47	4,942	0.25	0.32
Frozen salmon	41	14,066	0.21	0.9
Frozen NP fillets	34	4,406	0.18	0.28
Frozen Sardines	27	1,628	0.14	0.1
Frozen whole fish	25	1,559	0.13	0.1
Frozen Tuna	23	4,726	0.12	0.3
Frozen Pangasius Steaks	22	2,266	0.12	0.14
TOTAL	19,127	1,568,565	100	100

ANNEXES

Annex 1. The monthly composition of the top 20 most exported marine aquarium species in 2017

Species	Common Name	Number	Value (Kshs)
<i>Paracanthurus hepatus</i>	Blue Surgeonfish	12,704	1,738,009
<i>Centropyge acanthops</i>	Orangeback Angelfish	14,933	1,293,366
<i>Anthias squamipinnis</i>	Lyretail Coralfish	23,187	1,159,718
<i>Nemateleotris magnifica</i>	Fire Goby	12,310	854,523
<i>Ecenius midas</i>	Golden Blenny	7,349	713,925
<i>Halichoeres iridis</i>	Rainbow Wrasse	6,623	668,053
<i>Pomacanthus chrysurus</i>	Goldtail Angelfish	1,135	629,087
<i>Chromis viridis</i>	Blue-green Chromis	24,253	536,778
<i>Labroides dimidiatus</i>	Bluestreak Cleaner Wrasse	15,864	515,308
<i>Acanthurus leucosternon</i>	Powder Blue Tang	5,216	504,323
<i>Salarias fasciatus</i> (red fin)	Lawnmower Blenny	12,111	478,587
<i>Macropharyngodon bipartitus</i>	Rare Wrasse	6,660	424,875
<i>Pseudocheilinus hexataenia</i>	<i>Pseudocheilinus hexataenia</i>	8,526	409,556
<i>Valenciennea strigata</i>	Bluestreak Goby	7,029	407,340
<i>Ostracion</i> sp.	Boxfish	6,524	359,404
<i>Cirrhilabrus exquisitus</i>	Exquisite Wrasse	4,809	327,769
<i>Doryhamphus excisus</i>	Blue Striped Pipefish	6,382	279,060
<i>Chromis Vanderbilt</i>	Vanderbilt's Chromis	9,364	267,308
<i>Himanthura uarnak</i>	Honeycomb Stingray	12	256,000
<i>Valenciennea sexguttata</i>	Sleeper Blue Dot Goby	3,567	196,416
Others		135,133	10,847,499
Grand Total		323,691	22,866,905

Annex 2. The monthly composition of the top 20 most exported marine invertebrate species in 2017

Species	Quantity	Value (Kshs)
Lysmata spp.	11362	926200
Nerita spp.	37767	543577
Clibinareus spp.	28158	421482
Heteractis spp.	4607	398669
Hippolysmata spp.	4100	355123
Hymenocera - picta	4678	343590
Dolabella spp	6055	274687
Calibanarius spp	21680	198631
Protogaster spp.	3487	166493
Trochus spp	6180	136317
Radianthus spp	1049	133250
Sarcophyton spp	1352	116471
Stichodactyla spp	1151	110224
Stenopus spp	2329	99375
Cespitularia spp	1122	99166
Cerithium spp	9934	98892
Calcinus spp	11139	86713
Sabellastarte spp	1007	84520
Capnella spp	1070	77759
Petrolisthes - spp	2202	67087
Others	15701	1097725
Grand Total	176130	5835949