CERTIFICATION

I certify that the Annexes are true copies of the originals. I also certify the accuracy of the English-language translations of all documents that are not in one of the official languages of the Court.

Hon. Justice (Rtd) P. Kihara Kariuki

Agent of the Republic of Kenya

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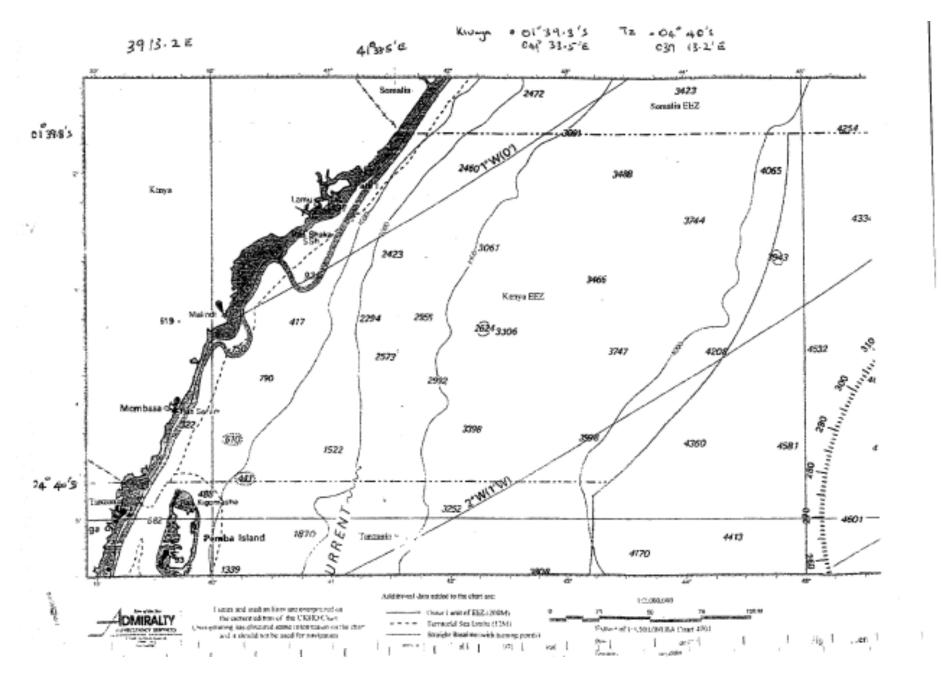
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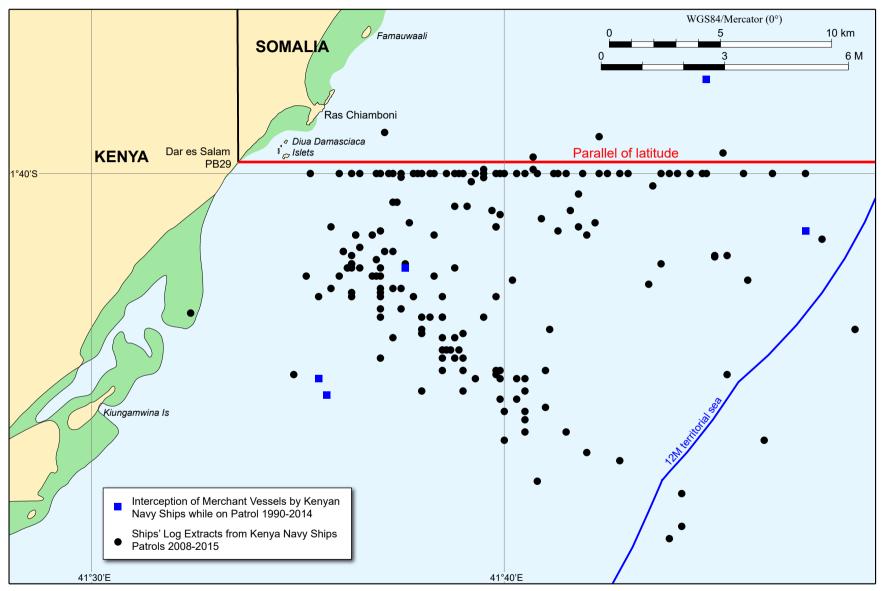
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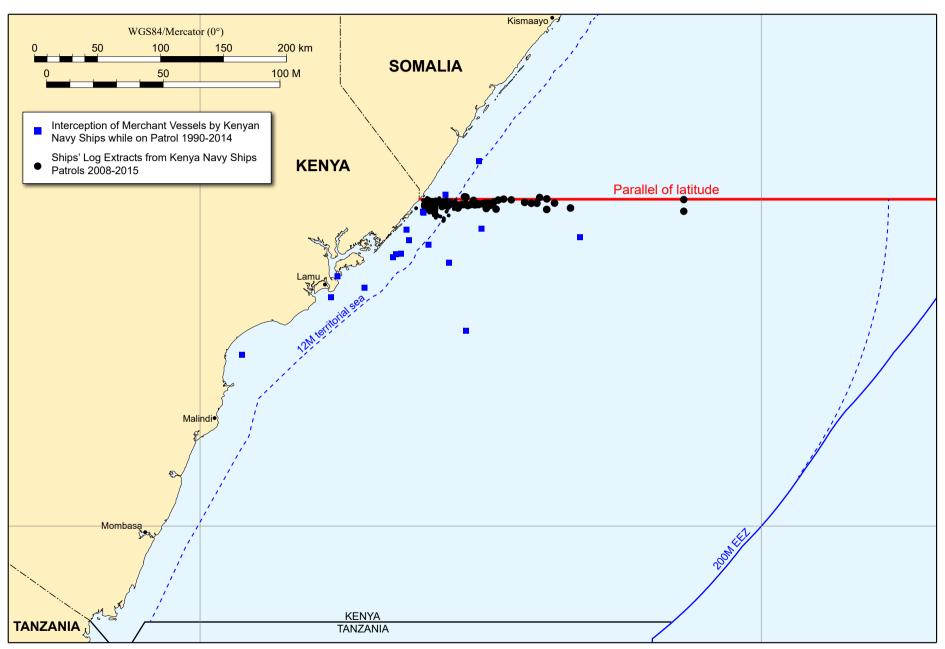
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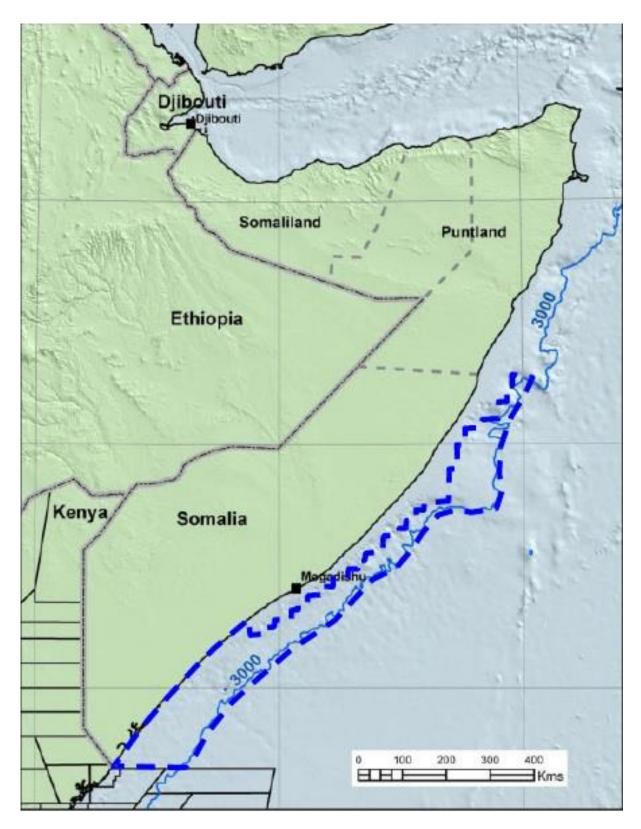
Kenya's EEZ and Boundaries Coordinates as per 11 May 2004 memorandum Figure 1



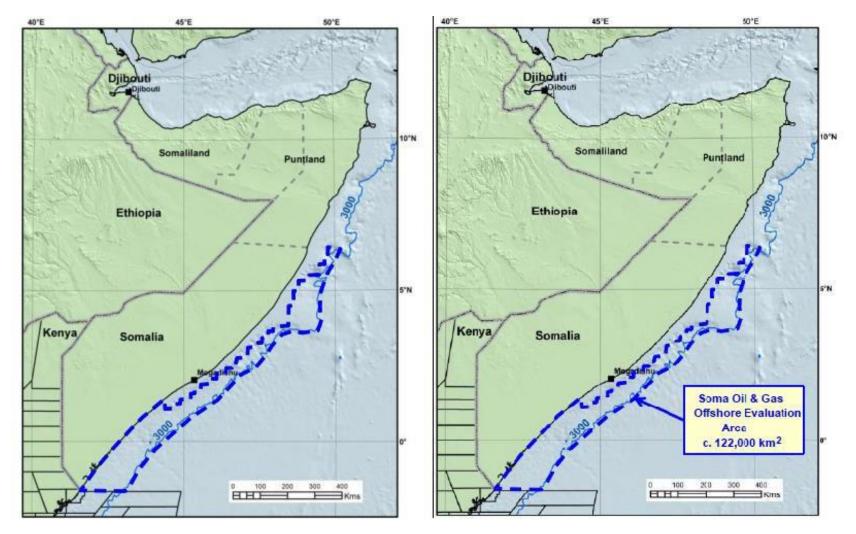
KCM, Figure 1-13 (revised) Figure 2



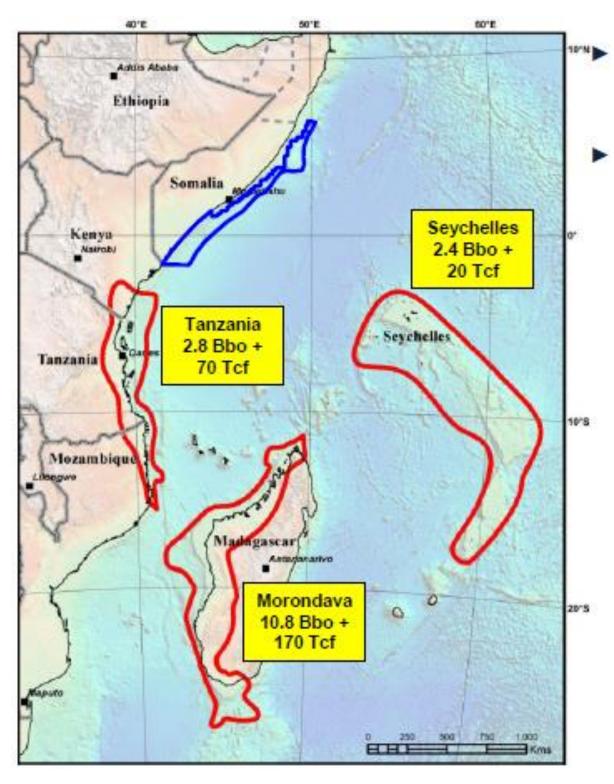
Kenyan Naval Patrols and Interceptions in the EEZ Figure 3



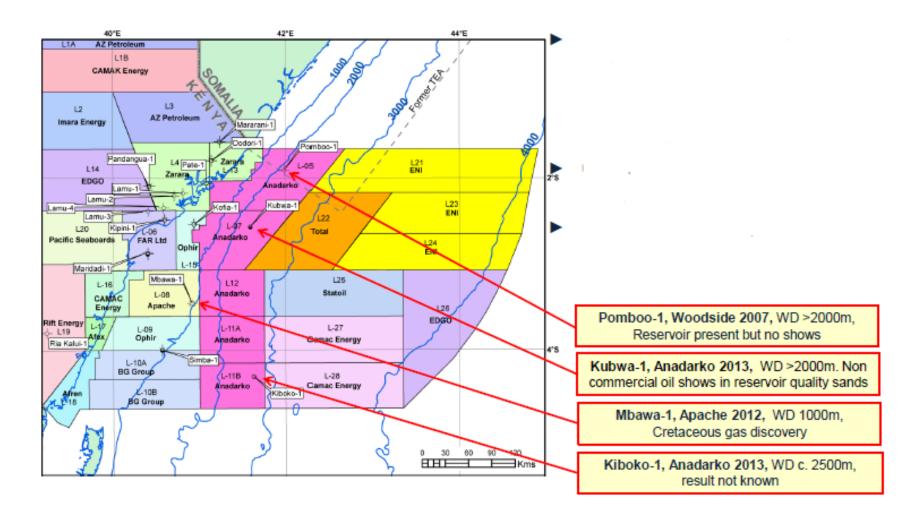
South Somalia Offshore (Soma Oil and Gas, *Unlocking Somalia's Potential*, Company Presentation, 7 October 2013) Figure 4



Comparison between: (i) South Somalia Offshore (Soma Oil & Gas, Unlocking Somalia's Potential, Company Presentation, 7 October 2013); and (ii) Soma Oil & Gas Offshore Evaluation Area (Source: Soma Oil. Unlocking Somalia's Potential Eastern African Oil, Gas – LNG Energy Conference, Nairobi, Kenya, 29 – 30 April 2014, Kenya), KCM, Figure 1-30 Figure 5

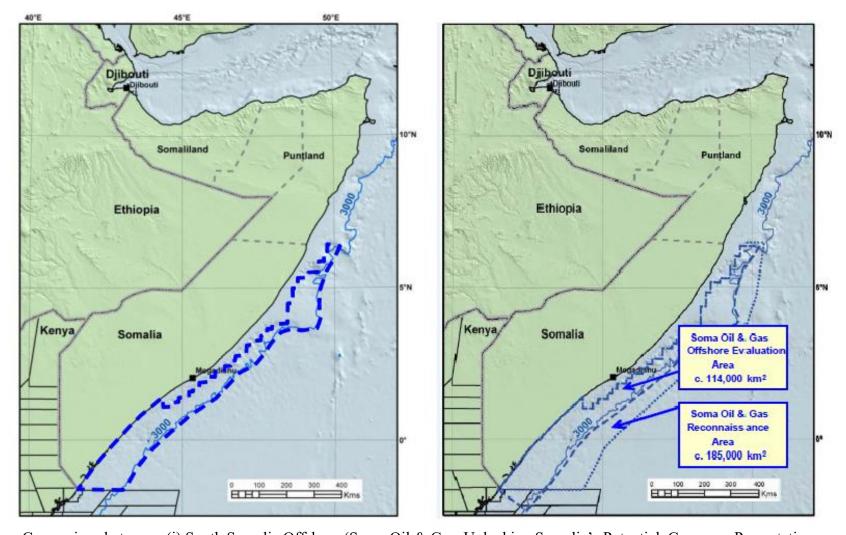


USGS Estimated Undiscovered Resources (2012) (Soma Oil & Gas, *Unlocking Somalia's Potential*, Company Presentation, 7 October 2013) Figure 6



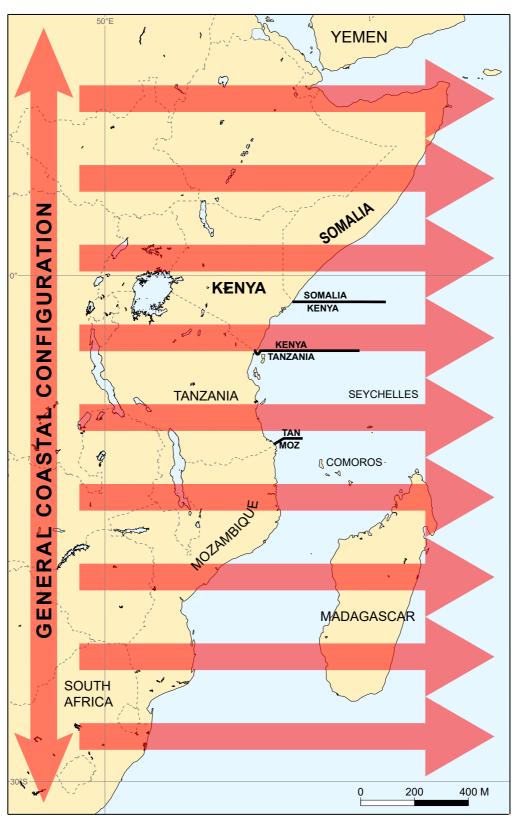
Industry Activity in Offshore Kenya (Soma Oil & Gas, *Unlocking Somalia's Potential*, Company Presentation, 7 October 2013)

Figure 7

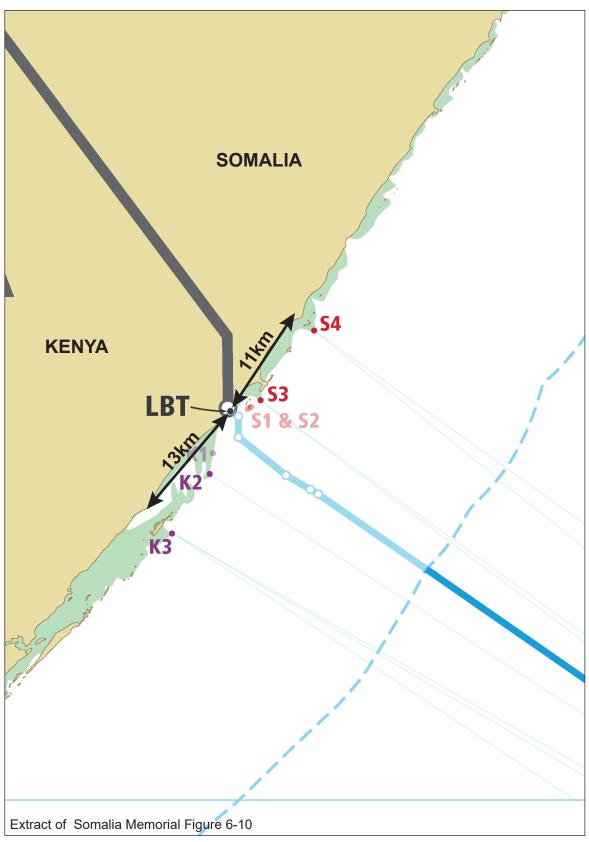


Comparison between: (i) South Somalia Offshore (Soma Oil & Gas, Unlocking Somalia's Potential, Company Presentation, 7 October 2013); and (ii) South Somalia Offshore vs North Sea (Soma Oil & Gas, Unlocking Somalia's Potential Somalia Oil & Gas Summit, 20 October 2014)

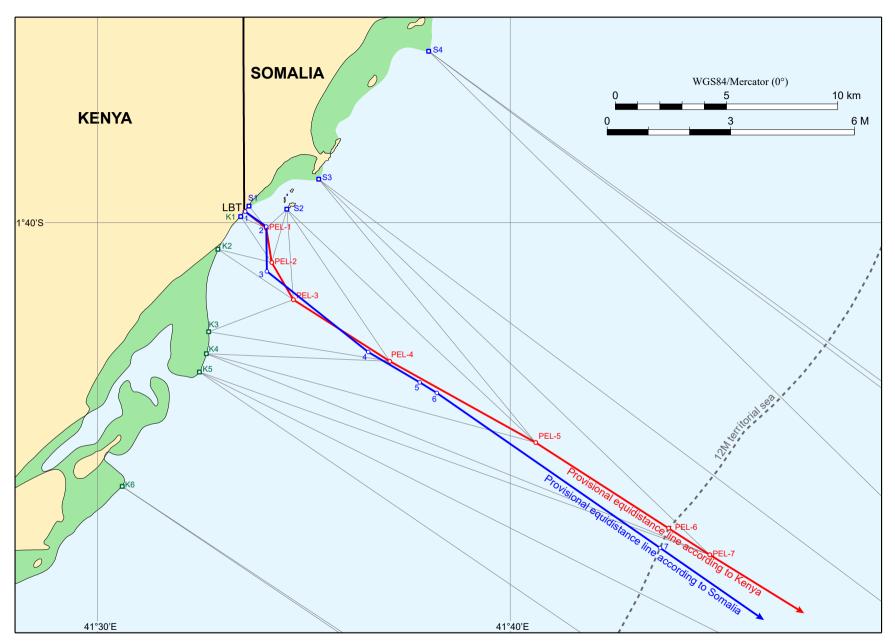
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General Coastal Configuration of the East Coast of Africa Facing Due East Figure 9

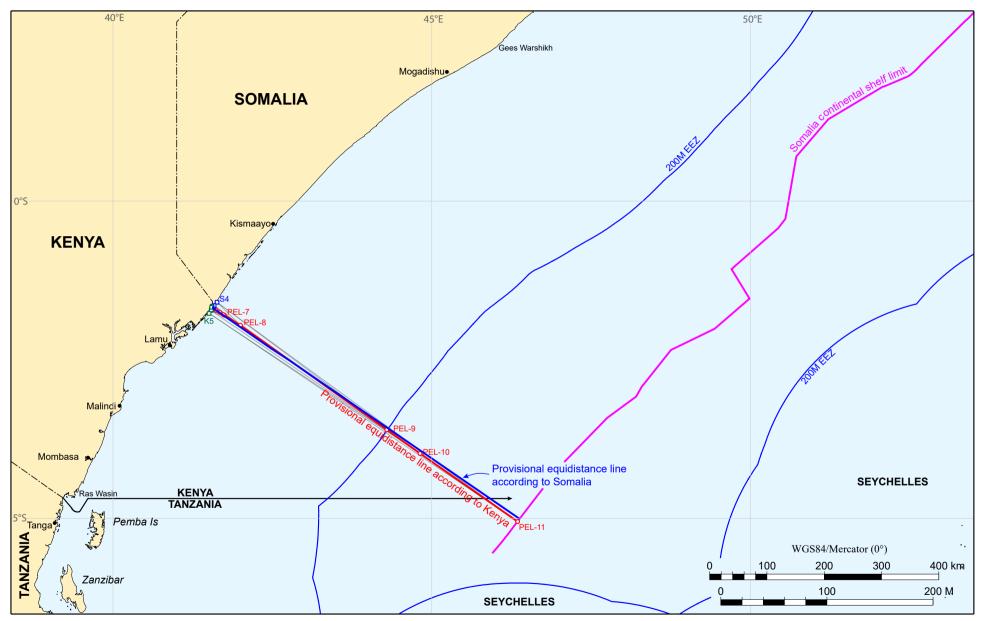


The Short Segment of the Coast Incorrectly Used by Somalia to Calculate Its Line Figure 10

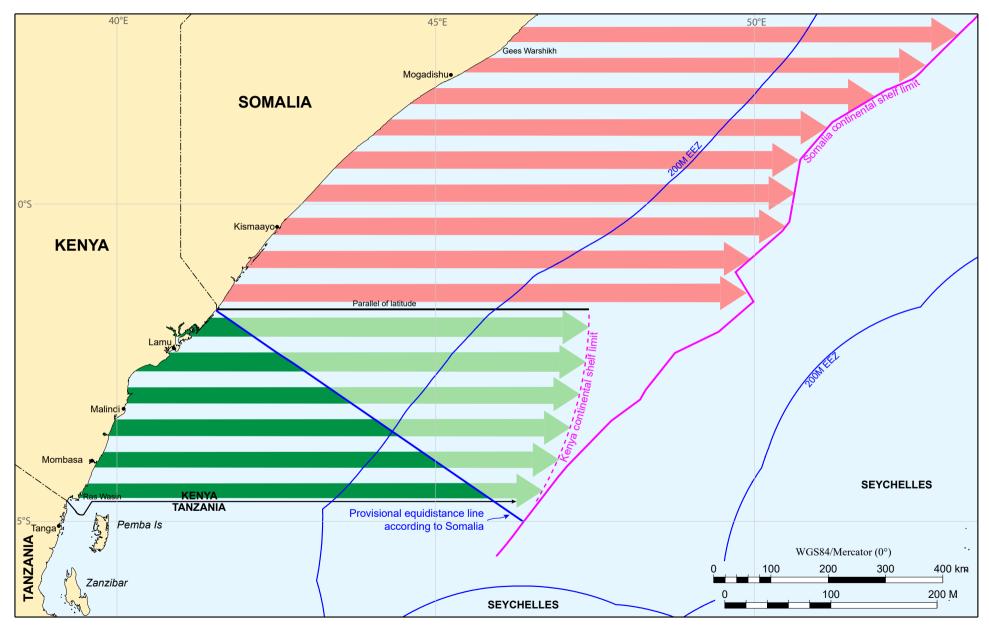


Construction of the Provisional Equidistance Line in the Territorial Sea

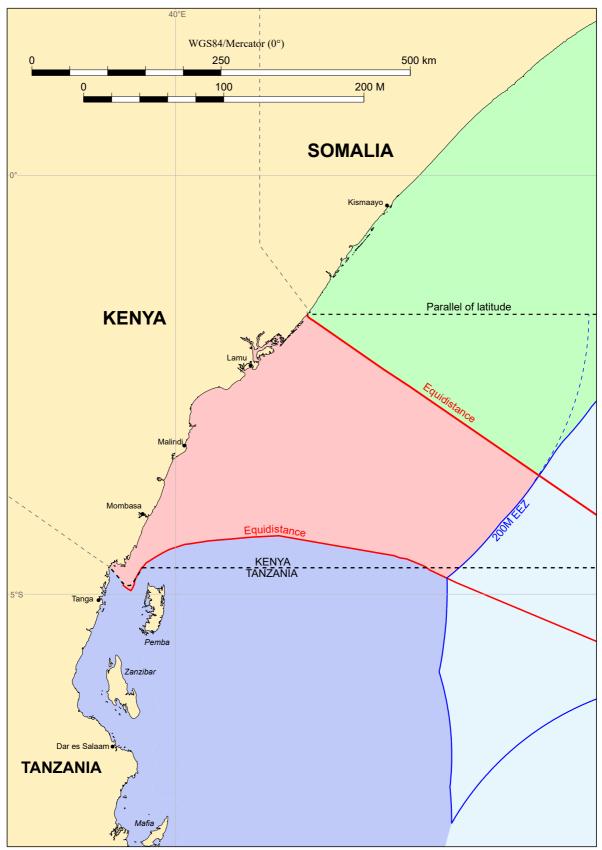
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Construction of the Provisional Equidistance Line in the EEZ and Continental Shelf Figure 12

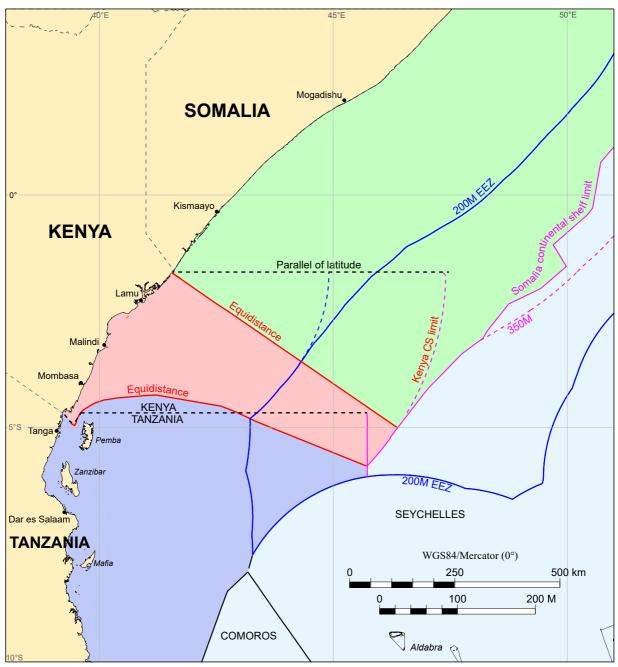


Cut-off Effect on Kenya's Maritime Projection Figure 13

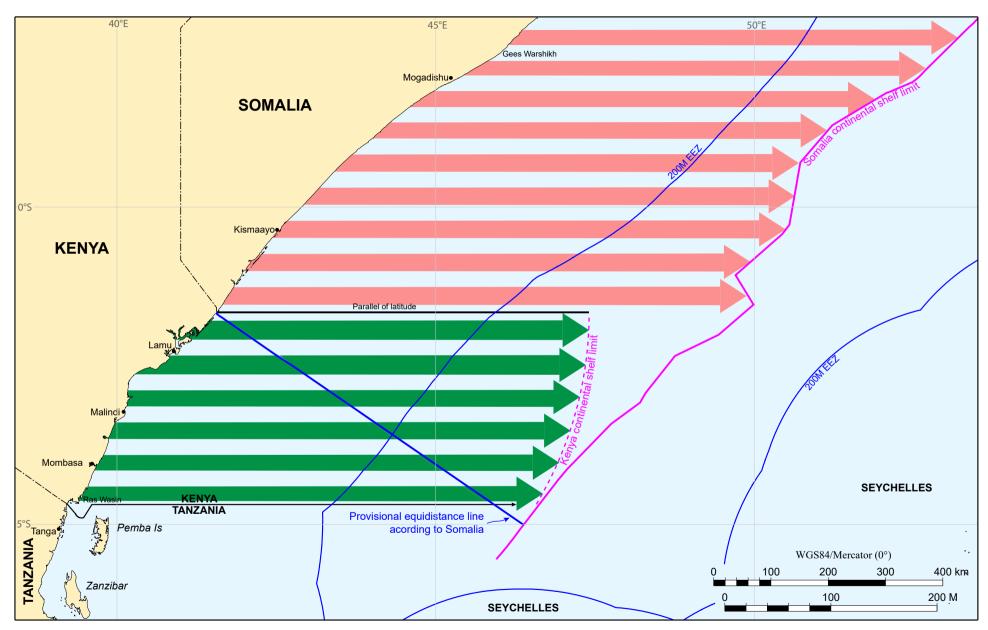


Cut-off Effect on Kenya's Maritime Areas within 200M Arising from the Kenya-Tanzania

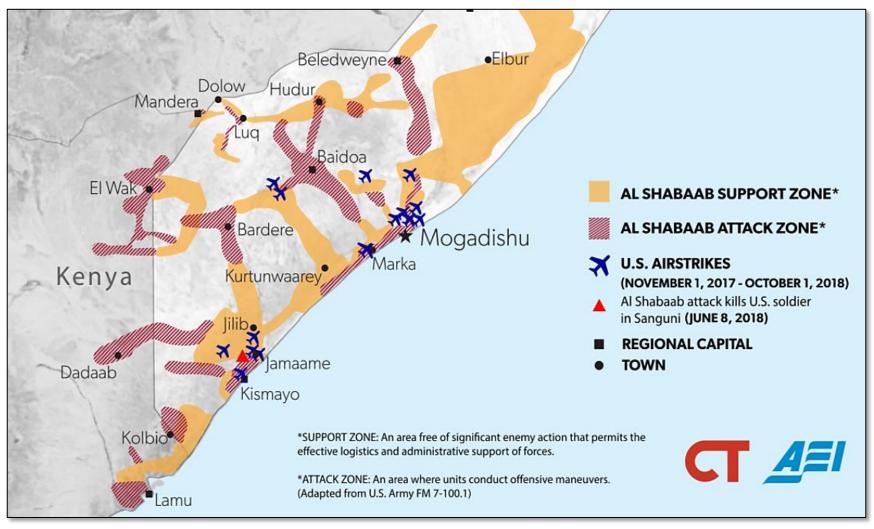
Equidistance Line
Figure 14

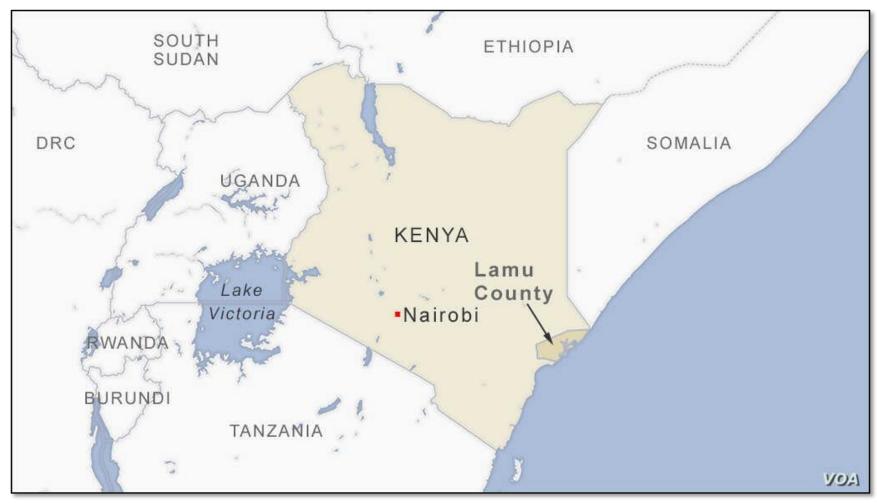


Cut-off Effect on Kenya's Maritime Areas beyond 200M Arising from the Kenya-Tanzania
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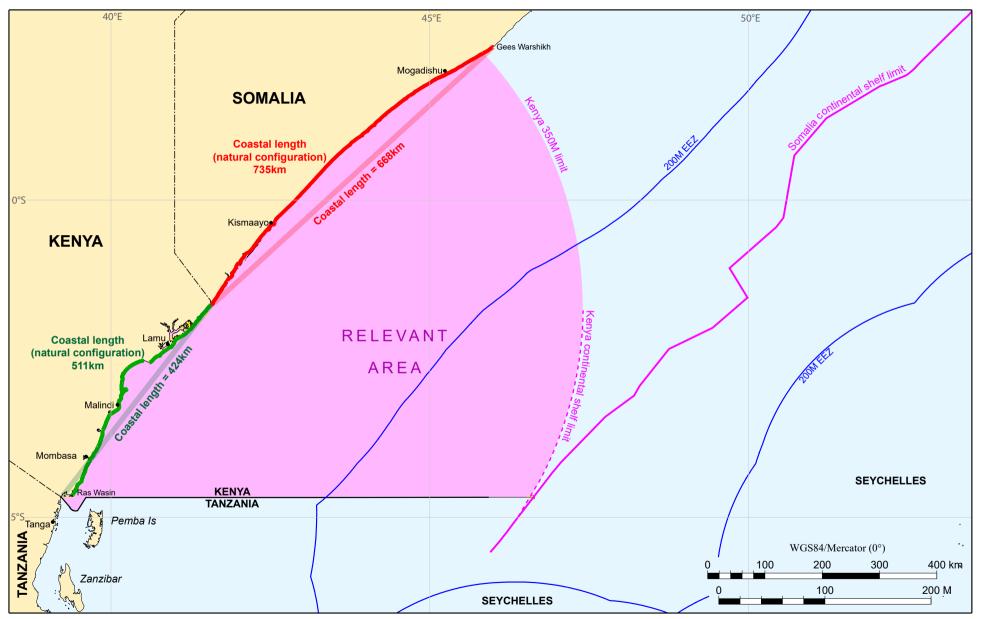


The Parallel of Latitude Boundary Would Not Cut-off Somalia Figure 16

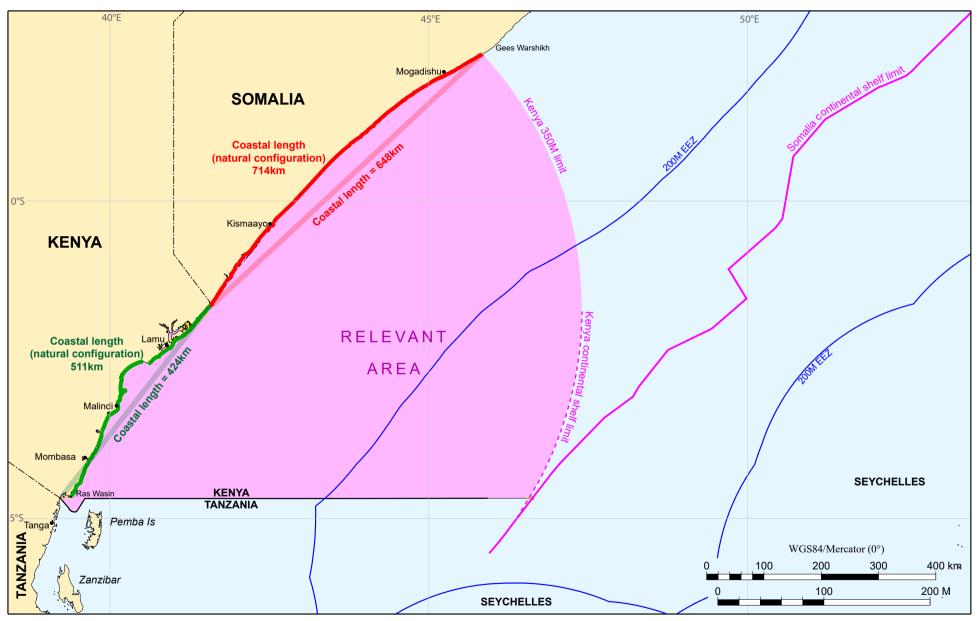




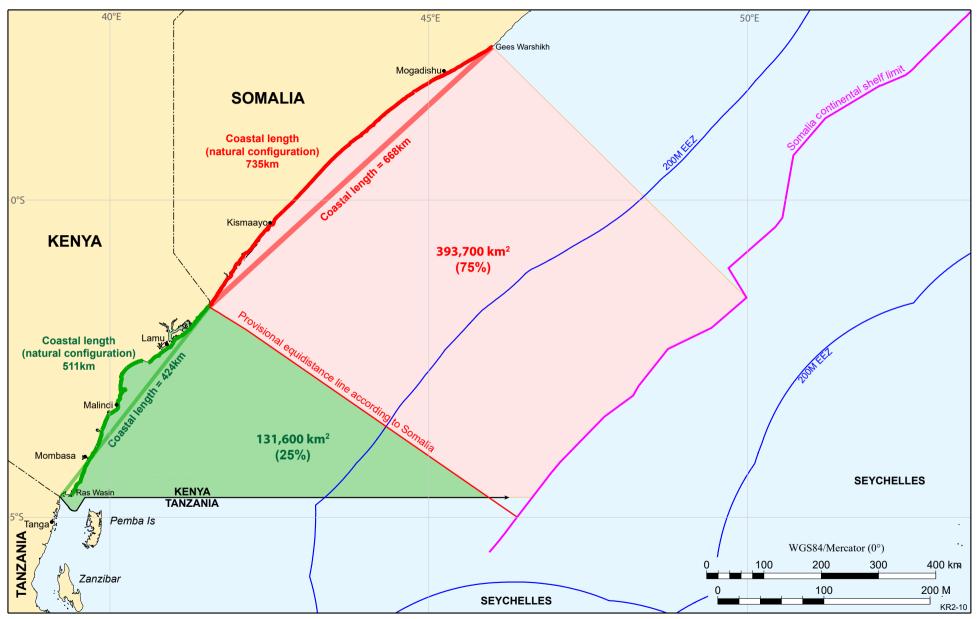
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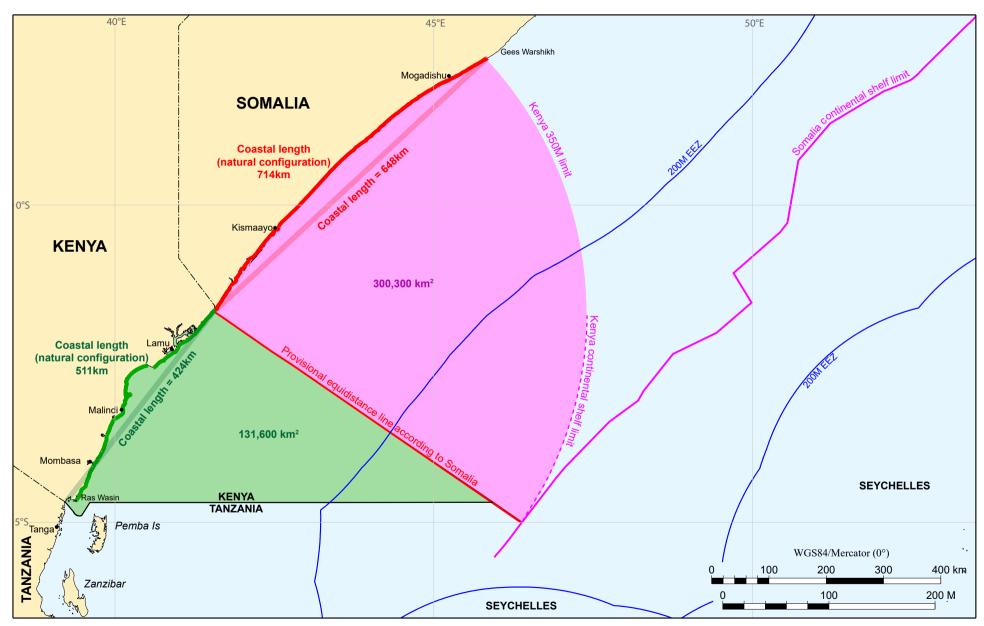
Somalia's Relevant Area Constructed in Accordance with Its Legal Submissions Figure 19



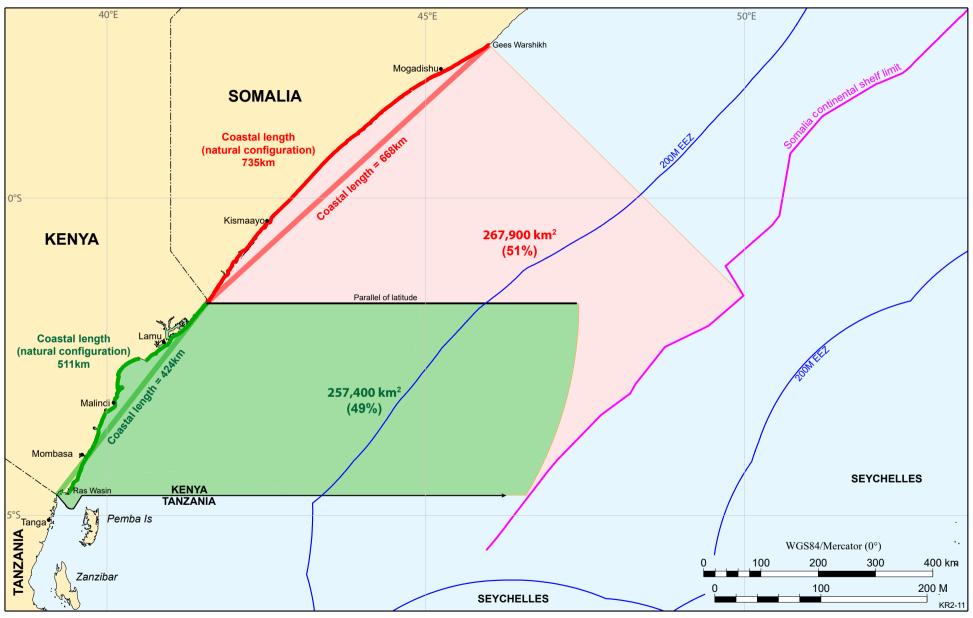
Somalia's Relevant Coastal Lengths (corrected) Figure 20



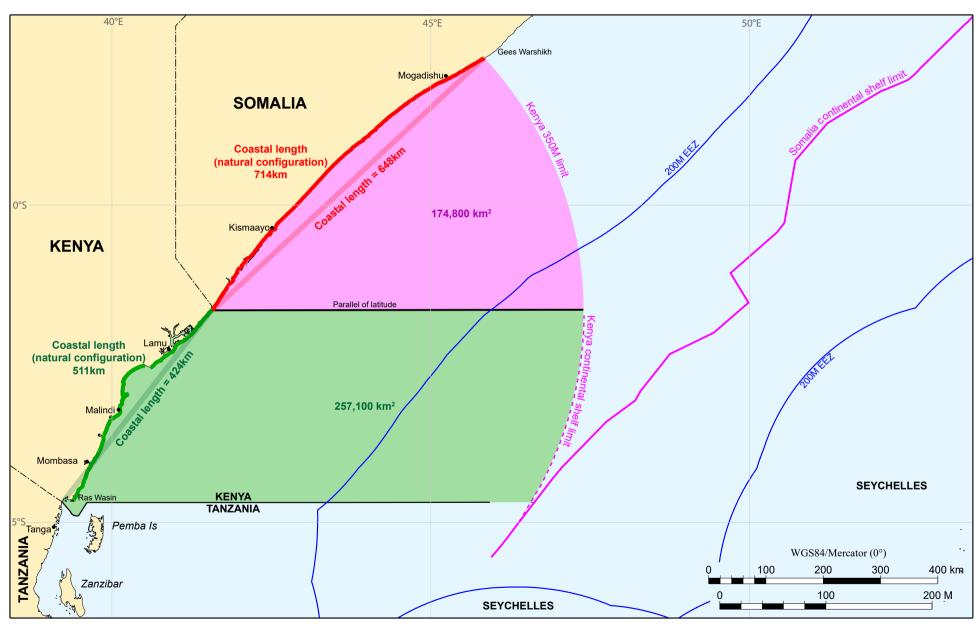
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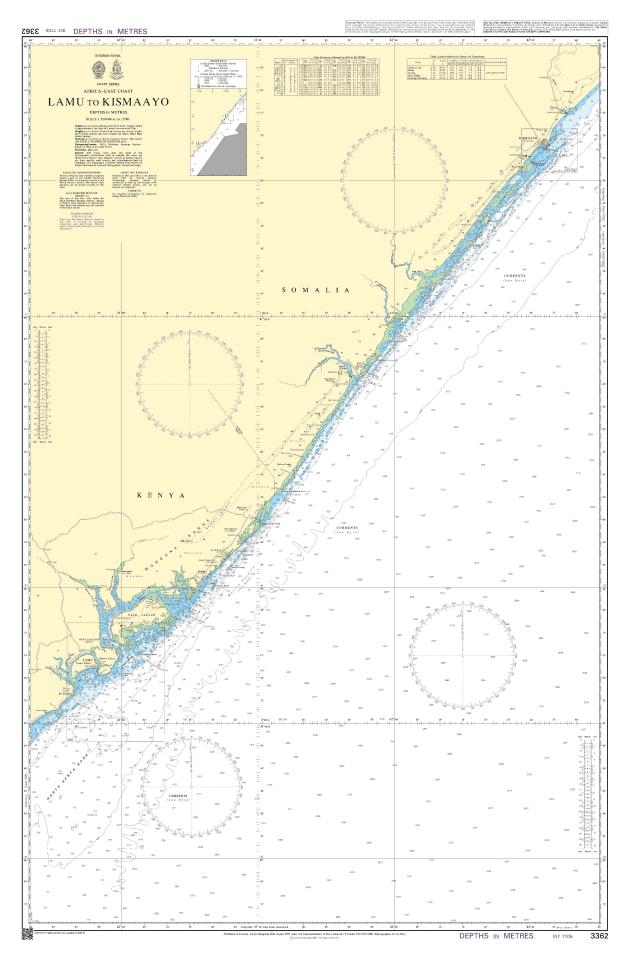
Division of the Relevant Maritime Area as per Somalia's Calculations (Once Corrected) by Somalia's proposed equidistance line Figure 22



KR, Figure 2-11 (revised) Figure 23



Division of the Relevant Maritime Area as per Somalia's Calculations (Once Corrected) Resulting from the Parallel of Latitude Boundary Figure 24



UK Hydrographic Office, British Admiralty Chart 3362: Lamu to Kismaayo, 28 August 1997

Annex WS1

Witness Statement of General (Ret'd) Joseph Raymond Kibwana, EGH, CBS, 11 January 2021

WITNESS STATEMENT OF GENERAL (RETIRED) JOSEPH RAYMOND KIBWANA, EGH, CBS

- 1. I am **JOSEPH RAYMOND KIBWANA**, an adult male of sound mind residing in Mombasa, Republic of Kenya.
- 2. At the time of my retirement, in August 2005, I had achieved the rank of General and was also the Chief of General Staff of the Kenya Armed Forces.
- 3. The rank of Chief of General Staff is the highest position in the Kenya Military.
- 4. I was one of the very first 10 recruits to the Kenya Navy post-independence. Kenya obtained its independence on 12 December 1963.
- 5. I joined the Kenya Navy on 10th December 1964 as a Cadet. Subsequently, my promotions were as follows:- See Annex "A".
- 6. At the time of joining, the Kenya Navy was being commanded by a British Royal Naval Training Team (RNTT) under a Bilateral Agreement with the United Kingdom.
- 7. The British Royal Navy Training Team formally handed over command of the Kenya Navy in 1972. At that time, I was a Major and working as a Staff Officer.

- 8. Prior to the handing over, I recall that the Royal Navy officers commanding the Navy Ships ordered patrols in the Northern Coast going up past the Port of Lamu and going as far as the current maritime boundary with Somalia based on the parallel of latitude.
- 9. Post 1972, the Kenya Navy maintained these patrols along its maritime boundaries with Tanzania and Somalia and lawfully exercised control and jurisdiction over the entire territorial waters.
- 10. At the time of joining the Kenya Navy, I was aware that the Republic of Somalia was being aggressive towards the Republic of Kenya for claims on land territory belonging to the Republic of Kenya culminating in the "Shifta" war (1963 1967).
- 11. There were some limited military engagements on the land border between Kenya and Somalia. Military hostilities de-escalated starting in 1967, following an Agreement on the Cessation of Hostilities between Kenya and Somalia.
- 12. As relations between Kenya and Somalia improved over time, up until 1991, the relationship between the Kenya Navy and the Somali Navy was cordial but characterized by cross border intrusions by Somali bandits.
- 13. I recall that, from 1979 onwards, the Kenya Navy routinely patrolled the maritime area up to the parallel of latitude.



- 14. At no time was there ever a threat made by the Somali Navy on any issues of the parallel line maritime boundary though the Republic of Somalia had a capable Naval force supplied by its then ally the former Union of Socialist Soviet Republics (USSR) and thus would have been able to enforce its rights, if the Somali Navy thought any rights were being intruded upon.
- 15. There was also no threat from the Somali Navy in the period from 1968 to 1991 and there were no incidents where the Somali Navy crossed the parallel line maritime boundary intentionally.
- 16. From 1991 onwards, after the start of the Somali civil war, the Kenya Navy was engaged in making sure that unauthorized vessels coming from Somalia were not allowed into Kenyan territorial waters and those that attempted to do so were escorted back. The Kenya Navy considered that unauthorized vessels had entered Kenyan territorial waters if those vessels crossed the parallel of latitude.
- 17. Through legal instruments dated 1979 and 2005, Kenya declared its northern maritime boundary as the parallel of latitude, which Somalia, to my knowledge, did not dispute.
- 18. Subsequent to the events of 1991 in Somalia, there were increasing incidents of acts of piracy occurring along the coastline in Somalia. From the period 1991-2000, these



largely consisted of theft of goods and products from the fishermen/traders based out of Lamu County.

- 19. The Kenya Navy used to intercept the pirate vessels and assist the Kenyan fishermen/traders.
- 20. From around the early 2000s onwards, there was an expanded and well-organized upsurge in Somali pirate attacks and also abduction of foreign and local people from the Republic of Kenya, who were held for ransom.
- 21. At the same time, following the bombing of the Embassy of the United States of America in Nairobi (in August 1998), the Republic of Kenya was aware of the increased threat of terrorism emanating out of Somalia.
- 22. These acts of terrorism emanating from Somalia have continued in the Republic of Kenya.
- 23. The Republic of Kenya, from 2001 onwards, increased the level of support to the Kenya Navy to guard territorial waters belonging to the Republic of Kenya. This was being done by an increase in the number of vessels, an enhanced radar system and greater information integration within the various arms of the Kenya Military. The territorial waters of Kenya subject to this increased support extended to the parallel of latitude. At no time were there protests from the Somali authorities to these interventions to secure this area.

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- 24. It is very important that the Kenya Navy be allowed to patrol the entire territorial waters, up to the parallel of latitude. Terrorist incursions, and incursions by pirates and bandits, often occur by sea. For example, as a naval officer, I am keenly aware that the November 2008 terrorist attacks in Mumbai, killing at least 174 people and injuring another 300, were conducted by terrorists who entered India using a hijacked fishing trawler. Kenya Navy's patrols are important to limit the risk of such terrorist acts occurring on Kenyan soil. If the Kenya Navy is stopped from patrolling up to the parallel of latitude, both within and beyond the territorial sea limit, the security situation for Kenya will decrease substantially. Terrorist activity in East Africa and Kenya, as well as piracy, would be expected to increase. This is a substantial risk to the lives of Kenyan and other civilians.
- 25. At the time of my retirement, the incidence of Somali piracy had attracted global attention and there was greater cooperation between the Republic of Kenya, the European Union and the United States of America to deal with the growing threat of piracy off the coast of Somalia. I understand that intelligence sharing, training and access to Kenyan Port facilities were some of the areas of cooperation. The same cooperation has occurred with regards to Somali-based terrorism, such as by Al Shabaab.



26. The statement contained in this Witness Statement is made from my own knowledge. I confirm it represents the truth as known to me.

DATED this 11th day of January 2021.

The second secon

JOSEPH RAYMOND KIBWANA, EGH, CBS

ANNEX "A"

RANK	EFFECTIVE	APPOINTMENT
2 nd Lieutenant	01/01/1966	Naval Base Unit Officer
Lieutenant	10/07/1966	Naval Base Unit Officer
Captain	10/07/1970	Naval Base Unit Officer
Major	01/01/1972	Staff Officers Kenya Navy H/Q
Lieutenant – Colonel	14/02/1979	Base Commander
Colonel	16/09/1981	Deputy Navy Commander
Brigadier	25/01/1984	Staff Officer Defence H/Q
Major General	20/04/1988	Navy Commander
Lieutenant General	01/05/1998	Commandant Nat'l Defence College
General	01/11/2000	Chief of the General Staff

Annex 1

Republic of Kenya, Kenyan Fisheries Management and Development Act No. 35, 9 September 2016

SPECIAL ISSUE

Kenya Gazette Supplement No. 156 (Acts No. 35)



REPUBLIC OF KENYA

KENYA GAZETTE SUPPLEMENT

ACTS, 2016

NAIROBI, 9th September, 2016

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THE FISHERIES MANAGEMENT AND DEVELOPMENT ACT

No. 35 of 2016

Date of Assent: 3rd September, 2016

Date of Commencement: 23rd September, 2016

ARRANGEMENT OF SECTIONS

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THE FISHERIES MANAGEMENT AND DEVELOPMENT ACT, 2016

AN ACT of Parliament to provide for the conservation, management and development of fisheries and other aquatic resources to enhance the livelihood of communities dependent on fishing and to establish the Kenya Fisheries Services; and for connected purposes

ENACTED by the Parliament of Kenya as follows-

PART I —PRELIMINARY

1. This Act may be cited as the Fisheries Management and Development Act, 2016 and shall come into force on the fourteenth day after publication in the Gazette.

Citation and commencement.

2. In this Act, unless the context otherwise requires—

Interpretation.

"access agreement or arrangement" means any agreement or arrangement entered into pursuant to section 128:

"Act" includes regulations or other forms of subsidiary legislation made hereunder;

"agent" means any person or unit appointed by the Board or Director-General to execute designated functions under this Act, or such other agent as may be appointed in accordance with section 17 (1) (c);

"aircraft" means any propelled or remotely controlled airborne device capable of sustained movement through the atmosphere and includes helicopters and monitoring devices;

"artisanal fisheries" means small scale traditional fisheries that may be carried out for subsistence or commercial purposes in which the owner is directly involved in the day-to-day running of the enterprise and relatively small amounts of capital are used;

"artisanal fishing vessel" means any local fishing vessel, canoe or un-decked vessel with a length overall of not more than ten meters, which is motorised or not motorised by an outboard or inboard engine not exceeding forty horsepower, or powered by sails or paddles, but does

not include decked or undecked semi-industrial fishing vessels or vessels used for recreational fishing;

"Authority" means the Fish Marketing Authority established by section 198;

"aquaculture" means the cultivation, propagation or farming of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants whether from eggs, spawn, spat, seed or other means or by rearing fish lawfully taken from the wild or lawfully imported into Kenya, or by other similar process;

"aquaculture establishment" means any area, enclosure, premise or structure set up or used on land or in water for the purposes of aquaculture, and includes any cage or raft or other system;

"aquaculture resources" means live fish and marine plants cultivated under aquaculture;

"authorized officer" includes a fisheries officer, a disciplines officer of the service and any person appointed by the Board under section 18;

"automatic location communicator" means a device approved by the Director which is placed on a fishing vessel and is designed to transmit, whether independently or in conjunction with another device or devices, information or data concerning position, fishing and such other activities of the vessel as may be required and includes a mobile transceiver unit;

"barter" means trade of fish and fish products by two or more persons without use of money;

"beach management unit" means an organization of fishers, fish traders, boat owners, fish processors and other beach stakeholders who traditionally depend on fisheries activities for their livelihoods;

"Board" means the Fisheries Service Board established by section 10;

"Board of Directors" means the Board of Directors of the Fish Marketing Authority established under section 201

"buy" includes-

(a) barter;

- (b) purchase;
- (c) attempt to barter;
- (d) attempt to purchase;
- (e) receive on account or consignment;
- (f) receive in order to send, forward or deliver for sale;
- (g) broker a sale;
- (h) purchase or barter for future goods or for any consideration of value; and
- (i) purchase or barter as an agent for another person;
- "buyer" means any person who buys;

"Cabinet Secretary" means Cabinet Secretary for the time being responsible for fisheries;

"carrier vessel" means a vessel that carries fish that have been harvested by another vessel but does not engage in fishing itself;

"commercial aquaculture" includes any aquaculture operation resulting or intending or appearing to result in the sale or trade of any fish which is a product of such aquaculture operation, including semi-commercial aquaculture;

"Council" means the Kenya Fisheries Council established under section 6;

"crew member" means a worker who is part of a team working on a fishing vessel, towards a common function, whether paid or unpaid, other than the master, a pilot or shore-based persons carrying out work aboard a fishing vessel and fisheries observers:

"dealing in fish" includes collecting, transporting, storing, transshipping, buying or selling fish or fish products for purposes of trade;

"designated Fishing Port" means fishing port established under section 50(1) (b);

"Director-General" means the person appointed as such under section 15;

"export" in relation to fish or fish products means to-

- (a) send or take out of Kenya; or
- (b) carry or transport anything out of the country;

"export facility" means any building or vessel or area in which fish and fish products is handled, prepared and stored for export purposes, including the surroundings under the control of the same management;

"farming" in relation to any fish means the breeding, cultivating and rearing of any such fish or the cultivating of any such vegetation, as the case may be;

"fish" means any marine or aquatic animal or plant, living or not and processed or not, and any of their parts and includes any shell, coral, reptile and marine mammal;

"fisher" means every person employed or engaged in any capacity or carrying out an occupation on board any fishing vessel, including persons working on board who are paid on the basis of a share of the catch but excluding pilots, naval personnel, other persons in the permanent service of a government, shore-based persons carrying out work aboard a fishing vessel and fisheries observers;

"fish landing station" means a point on the shore of any waters or coastline of which the Director-General has by notice in the gazette designated as a point to land fish;

"fish processing" means any process that adds value to or preserves fish and includes the cutting up, dismembering, cleaning, sorting, icing, freezing, drying, chilling, salting, gutting, smoking, canning or any other action taken to alter the shape, appearance or form of fish from that in which the fish is when first taken from its natural habitat:

"fish processing establishment" means any place other than a licensed fishing vessel where fish are canned, dried, gutted, salted, iced, chilled, frozen, smoked or otherwise processed or stored but does not include a restaurant, eating place, hotel, or place where fish is prepared for immediate retail sale or consumption;

"fish product" means any product or part thereof (including oil) obtained by fish processing, and intended for use as human food, animal feed or raw material ingredient in the manufacture of other commodities of commercial or ornamental value;

"fisheries officer" means the Director-General and any employee of the Service described in the first schedule;

"fishery" means -

- (a) one or more stocks of fish, or parts thereof existing in a delineated area, which can be treated as a unit for the purposes of conservation, development and management, taking into account geographical, scientific, technical, customary, recreational, economic and other relevant characteristics; or
- (b) any fishing for such stocks;

"fishery resources" or "fisheries resources" means any fishery or stock, species or habitat of fish or part thereof;

"fishing" means-

- (a) searching for or taking of fish;
- (b) the attempted searching for or taking of fish;
- (c) engaging in any other activity which can reasonably be expected to result in the locating or taking of fish;
- (d) placing, searching for or recovering any fish aggregating device or associated equipment including radio beacons;
- (e) any operation on Kenya fishery water or on the high seas in support of or in preparation for any activity described in paragraphs (a), (b), (c) or (d);
- (f) use of an aircraft which is related to any activity described in paragraphs (a), (b), (c) or (d), except for flights in emergencies involving the health or safety of a crew member or the safety of a vessel, but does not include aquaculture or the transportation of fish;

"fishing gear" means any equipment, implement, structure, construction, installation or other article that can be used in the act of fishing, whether or not it is used in connection with a vessel, including any fishing net, line, float, cork, buoy, basket, light, winch, boat or aircraft;

"fishing operations" includes fishing, supply of provisions to fishing vessels, and the handling and processing of fish up to the time it is first landed;

"fishing port" means a place on a lake shore or sea front where fishing vessels may resort for shelter, servicing, loading and off-loading of fish and fishing equipment;

"fishing related activity" means any activity in support of, or in preparation for, fishing including the—

- (a) transshipping of fish to or from any vessel;
- (b) landing, packaging, processing, handling or transporting of fish that have not been previously landed at port;
- (c) provision of personnel, fuel, gear and other supplies at sea or performing other activities in support of fishing operations;
- (d) exporting fish or fish products from the country; and
- (e) attempting or preparing to do any of the above;

"fishing vessel" means any vessel used for, equipped to be used for, or of a type that is normally used for, fishing or fishing related activities;

"flag State" in relation to a vessel that is not a Kenya fishing vessel means the State in which the vessel is registered, provided it is registered in only one State;

"foreign fishing vessel" means any fishing vessel other than a Kenya fishing vessel and includes any support vessel, notwithstanding that the vessel may be registered or licensed or required to be registered or licensed in Kenya pursuant to this Act or under the Merchant Shipping Act and Kenya Maritime Act;

Act No.4 of 2009 Act 5 of 2006

"genetic resource" includes germplasm of plants, animals or other organisms containing useful characters of actual or potential value;

"Government" means the Government of Kenya;

"high seas" means the waters beyond areas under the jurisdiction of any State including the territorial sea, exclusive economic zone or other zone of national jurisdiction;

"illegal fishing" includes—

- (a) activities conducted by national or foreign vessels in waters under the jurisdiction of a state without the permission of that state, or in contravention of its laws and regulations;
- (b) activities conducted by vessels flying the flag of states that are parties to a relevant regional fisheries management organization but operate in contravention of the conservation and management measures adopted by that organization and by which those states are bound or relevant provisions of international law; and
- (c) activities carried out in violation of national laws or international laws or international obligations, including those undertaken by co-operating states to a relevant regional fisheries management organization;

"import" means the bringing into Kenya or Kenya Fishery waters of any fish or fish product and aquatic flora from any place outside Kenya;

"industrial fishing vessel" means a decked fishing vessel with an overall length of twenty meters or greater and with an inboard engine;

"international agreement" includes any treaty, convention, or other legally binding instrument, including bilateral, multilateral regional agreements or arrangements that Kenya is a party pursuant to the Treaty Making and Ratification Act, 2013;

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"international conservation and management measures" means measures which are notified in the Gazette in accordance with section 31;

"Kenya fishery waters" includes all maritime zones declared in the Maritime Zones Act, internal waters, Lakes, riverine systems and any other waters including intertidal, inland and riverine over which Kenya exercises or claims jurisdiction;

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"Kenya fishing vessel" means a fishing vessel which is registered under the Merchant Shipping Act, and does not hold any other registration, or is wholly owned and crewed by residents of Kenya or by other persons gazetted by the Service as persons who traditionally fish in Kenya fishery waters, and which meets such other conditions as may be prescribed;

"Kenya Marine and Fisheries Research Institute" means the institute established under the Science and Technology Act;

"landing" means bringing any fish or fish product to the harbour, port or beach from within or outside the Kenya fishery waters and offloading;

"licensing period" means the period of time during which any licence or authorization issued in accordance with this Act is valid;

"locally based foreign fishing vessel" means any foreign fishing vessel which—

- (a) is based in and fully controlled or operated from Kenya;
- (b) fishes exclusively in the Kenya fishery waters; and
- (c) lands all of its catch or a substantial part of its catch in Kenya;

"master" means a person in command or in charge or apparently in command of the vessel, aircraft or a vehicle, but does not include a pilot on board a vessel solely for the purpose of navigation;

"management" means an integrated process of information gathering, analysis, planning, consultation, decision making, allocation of resources, formulation and implementation of rules and regulations which govern fisheries activities in order to ensure the continued production of the resources and accomplishment of other fisheries objectives;

"operator" means any person responsible for the operations of, directs or controls a vessel, including the owner, charterer and master of the vessel;

"person" means any natural person or business enterprise and includes a corporation, partnership, cooperative, association and any foreign government, its subdivisions or agents;

"pollution" shall have the meaning assigned to it under the Environmental Management and Co-ordination Act, 1999; "recreational fishing" means non-commercial fishing by an individual for leisure or relaxation;

"sell" includes—

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- (a) any method of disposition for consideration of anything which has value or which can be exchanged for cash or barter;
- (b) disposition to an agent for sale on consignment;
- (c) offering or attempting to dispose of for value or receiving or having in possession for disposal for value or displaying for disposal for value, or sending or delivering for disposal for value or causing or permitting to be sending or delivering for disposal for value, or causing or permitting to be disposed for value, offered or displayed for disposal for value; and
- (d) disposition by way of raffle, lottery, or other game of chance under the Betting Control and Licensing Act:

and "sell" and "sold "have a corresponding meaning;

"semi-industrial fishing vessel" includes—

- (a) a decked fishing vessel with an overall length of not less than ten meters and not more than fifty GRT and not powered by an inboard engine; and
- (b) an undecked fishing vessel with an overall length of not less than ten meters and not more than twenty meters with less than fifty GRT and powered by engines of at least forty horse power;

"subsistence fishing" means local or non-commercial fisheries, oriented not primarily for recreation but for the procurement of fish for consumption by the fishers, their families and community;

"support vessel" means a vessel carrying out operations in connection with and support of a fishing vessel including transport, supply;

"surveillance" means checking and ensuring compliance with control measures imposed under this Act in fishing or fishing related activities;

"Service" means the Kenya Fisheries Service established under section 7:

"subsistence fishing" means local or non-commercial fisheries, oriented not primarily for recreation but for the procurement of fish for consumption by the fishers, their families and community;

"support vessel" means any vessel carrying out operations in connection with and support of a fishing vessel including transport, supply or fishing;

"surveillance" means checking and ensuring compliance with control measures imposed under this Act in fishing and fishing related activities;

"test fishing operation" means any fishing operation undertaken over a limited period of time with the approval of the Director-General for the purpose of testing the feasibility of commercial fishing operations with a view to establishing fishery operations, and not for commercial purposes;

"territorial waters" shall have the meaning assigned to it under the Maritime Zones Act, and includes the territorial sea;

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"transshipment" means transferring fish or fish products to or from any vessel, whether or not the fish or fish products have first been taken on board the vessel from which the fish is passed;

"unregulated fishing" includes -

- (a) activities conducted by vessels without nationality, or by those flying the flag state not party to that organization, or by a fishing identity in a manner that is not consistent with the conservation and management measure; and
- (b) activities carried in areas or fish stocks in relation to which there are no applicable conservation or management measures in where the fishing activity is conducted;

"unreported fishing" includes activities which the relevant authority has not been notified;

"vehicle" means any car, truck, van, bus, trailer or other powered land conveyance;

"vessel monitoring system" includes a satellite based reporting system capable of monitoring the position and activities of fishing vessels. 3. (1) Kenya shall have full jurisdiction and sovereign rights over fisheries resources in accordance with the Maritime Zones Act, and such other maritime zones or areas which may be claimed from time to time, and full sovereignty and jurisdiction over fisheries resources in all public waters within its territory, including to the outer limit of the territorial sea, notwithstanding any right, including ownership or occupation, that any person may possess in relation to the water, seabed, riverbed or subsoil.

Jurisdiction and sovereign rights of Kenya.

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- (2) In accordance with subsection (1), the sovereign rights of management and control over such fisheries resources are vested in Kenya.
- (3) Ownership of all information required to be reported, notified or otherwise given pursuant to this Act, including all information generated by an automatic location communicator or similar device that is part of a vessel monitoring system, is vested in the Government.
- 4. This Act, unless the contrary intention appears, shall apply to—

Application.

- (a) all Kenya fishery waters and areas over which Kenya exercises jurisdiction or sovereign rights;
- (b) fishing and fishing related activities, utilization of fish and genetic material derived from fish and any other activity falling within the scope of this Act:
- (c) persons, vessels, vehicles, aircraft, export facilities or other craft or place engaged in or otherwise connected with any activity falling within the scope of this Act;
- (d) persons (including non-citizens) and vessels (including foreign vessels) in and in relation to the Kenya fishery waters;
- (e) persons (including non-citizens) and vessels (including foreign vessels) in areas beyond national jurisdiction—
 - (i) following hot pursuit initiated in the Kenya fishery waters and conducted in accordance with international law; or
 - (ii) as required pursuant to this Act or international conservation and management measures; or

- (iii) as permitted by international law or any international agreement; and
- (f) all Kenya fishing vessels and all persons on them or dealing with them or having any relevant relationship to them or to persons on them, in and in relation to any area within or beyond national jurisdiction in so far as it does not conflict with the jurisdiction of another State.
- 5. (1) The objective of this Act is to protect, manage, use and develop the aquatic resources in a manner which is consistent with ecologically sustainable development, to uplift the living standards of the fishing communities and to introduce fishing to traditionally non-fishing communities and to enhance food security.
- (2) The implementation of this Act shall be guided by the following principles—
 - (a) long-term sustainable use, conservation and management of fisheries resources and habitat, and adoption and implementation of management measures in such a manner as to ensure that the fisheries resources and habitat are not overexploited, threatened or endangered;
 - (b) allocation and access to the fisheries resources in a manner that achieves optimum utilization, equitable distribution and long- term sustainable development of fisheries resources to achieve economic growth, human resource development, employment creation, a sound ecological balance and generational equity;
 - (c) conservation and protection of fisheries habitats;
 - (d) ensuring the effective application of the ecosystem approach to fisheries management;
 - (e) ensuring that biodiversity and genetic diversity in the marine environment is maintained and enhanced;
 - (f) fostering recreational and ornamental fishing, aquaculture and commercial fishing activities for the benefit of the country;
 - (g) encouraging the participation of users of the fisheries resources, and the general community, in the management of fisheries;

Objective and guiding principles.

- (h) ensuring that management measures are based on the best scientific evidence available and are designed to maintain or restore stocks capable of producing sustainable yield, as qualified by relevant environmental and economic factors including fishing patterns, the interdependence of stocks and generally recommended international standards;
- (i) application of the precautionary approach to the management and development of the fisheries at no less standard than is set out in any international agreement;
- (j) managing fisheries resources in an efficient and cost effective manner, including setting targets for the recovery of management costs;
- (k) collection and, as appropriate sharing, in a timely manner complete and accurate data and information concerning fishing activities and fisheries;
- (l) implementation and enforcement of conservation and management measures through effective monitoring, control and surveillance;
- (m) promotion of sustainable aquaculture in appropriate zones as a viable option to contribute to food security replenishing natural habitats through diversification from capture fisheries and wealth generation;
- (n) minimization of wastage, bycatch, discards, catch by lost or abandoned gear, pollution and the promotion of development and use of selective, environmentally safe and cost-effective fishing gear and techniques;
- (o) prevention or elimination of over-fishing and excess capacity and managing levels of fishing efforts so they do not exceed levels commensurate with sustainable use of fishery resources;
- (p) effective implementation of international agreements and relevant international laws in conformity with the Treaty Making and Ratification Act, 2013;

- (q) ensuring effective cooperation with coastal States, fishing States and entities and competent organisations; and
- (r) ensuring that the livelihood of fishers is enhanced.
- (3) All of the principles in subsection (1) should be applied to the greatest extent possible, and the principle set out in subparagraph (2)(a) shall be given priority at all times.

PART II—THE KENYA FISHERIES ADVISORY COUNCIL

6. (1) There is hereby established an advisory body to be known as the Kenya Fisheries Advisory Council ("the Council"), which shall consist of—

Establishment of the Kenya Fisheries Council.

- (a) the Cabinet Secretaries responsible for fisheries;
- (b) the Cabinet Secretary responsible for interior and co-ordination of national government;
- (c) Cabinet Secretary responsible for transport and infrastructure;
- (d) the Cabinet Secretary responsible for national treasury;
- (e) the Cabinet Secretary responsible for foreign affairs and international trade;
- (f) a representative from a university or research institution with expertise in fisheries and who shall be nominated by the University council;
- (g) a representative from the consumer federation nominated by the national consumer federation;
- (h) a designate from the Council of Governors with expertise in fisheries who shall be nominated by the Council of governors; and
- (i) a representative of fisheries nominated by a national umbrella of body fisheries.
- (2) The function of the Council shall be to review and advise the national Government on—
 - (a) policies in relation to the co-ordination of fisheries management in relation to the aquatic environment and human dimensions:

- (b) the allocation and access to fisheries resources;
- (c) intergovernmental agreements and arrangements related to fisheries;
- (d) research, education, capacity development in fisheries and the management of fisheries resources;
- (e) management plans and resources for the development of the fisheries sector; and
- (f) any other matters connected with this or any other related Act.
- (3) The chairperson of the Council shall be appointed by the President from persons nominated under clause (6)(2) not being a Cabinet Secretary, upon recommendation by the Cabinet Secretary responsible for fisheries.
- (4) The Vice Chairperson of the Council shall be elected by members of the Council at their first sitting, provided that the chair and vice chairperson shall not be of the same gender.
- (5) In making appointments of the members to the Council, the Cabinet Secretary shall observe regional, gender, age, disability and ethnic balance.
- (6) Each Cabinet Secretary represented on the Council in accordance with subsection (1) may designate an alternate who is knowledgeable and experienced in issues relevant to fisheries;
- (7) The Council may establish such working groups and committees as it deems necessary and as are agreed by the Cabinet Secretary.
- (8) The Ministry responsible for fisheries shall provide secretariat services for the Council.

PART III—THE KENYA FISHERIES SERVICE

- 7. (1) There is hereby established a Service to be known as the Kenya Fisheries Service, which shall be responsible for the conservation, management and development of Kenya's fisheries resources in accordance with this Act.
- (2) The Service shall be a body corporate with perpetual succession and a common seal and shall, in its corporate name, be capable of—

Establishment and status.

- (a) suing and being sued;
- (b) taking, purchasing, charging and disposing of movable and immovable property, and doing any other act or thing which may or be done by a body corporate.
- (3) The common seal of the Service shall not be affixed to any instrument except pursuant to a resolution of the Board and the affixing of the seal shall be attested by two members of the Board.
- 8. The Service shall have its headquarters in Nairobi and may establish such offices in the counties as may be appropriate to ensure that its services are provided at the county level.

Headquarters.

9. The functions of the Service shall be to—

Functions of Service.

- (a) ensure the appropriate conservation development of standards on management, sustainable use, development and protection of the fisheries resources;
- (b) formulate and monitor the implementation of policies regarding the conservation, management and utilization of all fisheries resources within the scope of this Act;
- (c) develop standards for the management of all fisheries and aquaculture activities and fishing related activities within the scope of this Act;;
- (d) develop guidelines for the preparation of fisheries specific management plans for the Kenya fishery waters;
- (e) provide education to create public awareness and support for fisheries conservation, management, development and sustainable use;
- (f) set and meet goals for fisheries conservation, management, development and sustainable use;
- (g) in consultation with the Kenya Marine and Fisheries Research Institute, approve and coordinate research activities in relation to matters falling within the scope of this Act;
- (h) collect and analyse data in relation to resources and activities falling with the scope of this Act;

- (i) identify manpower requirements and recruit manpower at all levels for the Service;
- (j) liaise as appropriate with agencies and persons, including stakeholders, industry, government agencies, regional and international organisations and experts, whether local or foreign, on matters falling within the scope of this Act;
- (k) act on behalf of the government, subject to the Treaty Making and Ratification Act, 2013 in relation to any domestic or international agreement relating to fishing, fishing related activities or any matter falling within the scope of this Act, to which Kenya is or may become a party;
- (l) administer and co-ordinate international protocols, conventions and treaties regarding fisheries in all its aspects in consultation with the Cabinet Secretary pursuant to the Treaty Making and Ratification Act, 2013;

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(m) subject to the Public Health Act and the Food, Drugs and Substance Act, control and regulate fish safety and quality;

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- (n) raise revenue through levies, fees, investments and other means in accordance with this Act and the Constitution, including solicitation by public appeal or otherwise, and accept and receive subscriptions, donations, devices and bequests, whether of movable or immovable property and whether absolute or unconditional for the general or special purposes of the Service or subject to any trust;
- (o) undertake the development of appropriate fisheries infrastructure, that relates to its mandate under this Act and the Constitution;
- (p) facilitate investment in commercial fisheries, in collaboration with relevant agencies, persons or bodies, including Government departments;
- (q) promote development and introduction of appropriate technologies in aquaculture production, processing and preservation in

- collaboration with relevant agencies, county governments and stakeholders;
- (r) identify and promote construction of any works deemed necessary for the sustainable development and economic utilization of fisheries resources;
- (s) in collaboration with county government and the Fish Marketing Authority established under section 201, identify opportunities and promote all aspects of fisheries marketing;
- (t) arrange and enter into joint ventures or any other forms of investment arrangement for purposes of performing any of its functions;
- (u) co-ordinate fish quality assurance and operations of the marine and coastal fisheries, aquaculture and inland and riverine fisheries;
- (v) coordinate and or undertake monitoring, control and surveillance of all activities within the scope of this Act; and
- (w) perform such other duties and functions consistent with the provisions of this Act as may be necessary to carry out the objectives and provisions of this Act.
- 10. (1) There shall be a board of directors of the Service, which shall—

Establishment, functions, powers and duties of the Board of Directors.

- (a) provide general control over and be accountable to the Cabinet Secretary for the exercise of the functions and powers of the Service;
- (b) advise the Cabinet Secretary on all matters pertaining to the conservation, management standards, development, and sustainable use of fisheries resources;
- (c) provide recommendations to the Cabinet Secretary for overall policy in matters within the scope of this Act;
- (d) collaborate with the Fish Marketing Authority established under section 204 and other agencies to ensure that trade in fish is carried out in accordance with the provision of this Act;

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 - (e) approve the annual budget and financial plan of the Service and otherwise provide oversight for all financial matters;
 - (f) endorse the annual report of the Service required under section 25 and transmit it through the Cabinet Secretary to Parliament;
 - (g) establish an open, competitive, transparent and objective selection process, and required qualifications for, the Director-General, and as appropriate for other persons employed by the Service;
 - (h) establish an open, competitive employment policies, a transparent and objective selection process and general terms and conditions for employees of the Service;
 - (i) provide policy guidance over the exercise of the functions and powers of the Service; and
 - (j) perform any other function which the Cabinet Secretary may by notice in the Gazette prescribe.
- (2) The staff of the service shall be as provided under the First Schedule.
- (3) Each member of the Board, when exercising powers or performing duties under this Act shall—
 - (a) act in good faith and in what the member believes to be the best interests of the Service:
 - (b) comply with the provisions of this Act;
 - (c) exercise the care, diligence and skill that a reasonable director would exercise in the same circumstances taking into account, among other things, to—
 - (i) the nature of the Service;
 - (ii) the nature of the decision; and
 - (iii) the position of member and the nature of the responsibilities undertaken by him or her; and
 - (d) rely on reports, statements and financial data and other information officially provided to the Board by the Director-General and other government entities.

- 11. (1) The members of the Board shall consist of—
- Membership of the
- (a) a chairperson appointed by the President from among the members appointed under paragraph (c);
- (b) the Principal Secretaries of the Ministries for the time being responsible for—
 - (i) fisheries;
 - (ii) defence;
 - (iii) finance;
- (c) five members, not being public officers, openly appointed by the Cabinet Secretary for their long-term knowledge and experience in the conservation, management, development and sustainable use of fisheries resources;
- (d) all members must meet the requirements of Chapter Six of the Constitution.
- (2) The Director-General shall be the secretary to the Board.
- (3) The members of the Board shall at their first meeting after appointment, elect a deputy chairperson from amongst their numbers provided that the chairperson and deputy chairperson shall not be of the same gender.
- (4) The Cabinet Secretary shall in making appointments under subsections (1)(c) have regard to the principle of gender parity, age, regional and ethnic balance and shall, to the extent possible, ensure an equitable representation from different sub-sectors of the fisheries sector.
- (5) A person shall be qualified to be appointed under subsection (1) (c) if, in addition to the requirements of that subsection, such person holds a university degree or its equivalent in
 - (a) natural resource or environmental management, development or science;
 - (b) fisheries studies, including fisheries governance, management, development or science;
 - (c) marine affairs;

- (d) port management;
- (e) aquatic science; or
- (f) any other matters related to the functions of the Board.
- (6) The term of all members described in subsection (1) and (2) who are not *ex officio* members, and persons appointed pursuant to subsection (5) shall be three years, and they shall be eligible for re-appointment for a total of two terms.
- 12. (1) The office of member of the Board, other than an *ex officio* member, shall become vacant if the member—

Termination of appointment as a member of the Board.

2016

- (a)resigns from office by notice in writing addressed to the Chairperson, who shall transmit such resignation to the Cabinet Secretary;
- (b) is removed from office by the Cabinet Secretary if the member—
 - (i) has been absent from three consecutive meetings of the Board without notifying the Chairperson;
 - (ii) is adjudged bankrupt or enters into a composition scheme or arrangement with his creditors;
 - (iii)is convicted of an offence involving false statements, fraud or dishonesty;
 - (iv) is convicted of a criminal offence;
 - (v) is unable to, by reason of mental or physical infirmity to discharge functions as a member of the Board;
 - (vi)is found to have acted in a manner prejudicial to the aims and objectives of this Act; or
 - (vii) fails to comply with the provisions of this Act relating to disclosure.
- (2) Vacancies occurring pursuant to this section or for any other reason prior to the expiration of a member's term, shall—
 - (a) in the case of an ex officio member be filled by appointment of another nominee by the Cabinet

Disclosure

interest.

Secretary of the relevant Ministry or the governing body of the relevant parent organization;

- (b) in the case of a member other than an *ex officio* member be filled in the same manner as vacancies arising from the expiration of that member's term
 - Provided that such appointments shall only be effective for the remainder of any applicable unexpired term of the departing member.
- (3) The exercise of a power or the performance of a function of the Board is not invalidated by reason of a vacancy in the membership of the Board.
- 13.(1) A member of the Board shall declare his or her interest in any matter falling within the functions of the Board in which the member of the Board knows or ought to have reasonably known that an interest exists as described in subsection (5).
- (2) A member who has an interest shall, after the relevant facts have come to his or her knowledge, immediately disclose the nature of his or her interest to Board members through the Chair.
- (3) The disclosure given under subsection (2) shall be recorded in the minutes of the Board meeting at which the disclosure is made, or the first Board meeting which follows the disclosure, and the member shall—
 - (a) not take part, after the disclosure, in any matter under consideration by the Board which relates to the interest, including any deliberation or decision of the Board;
 - (b) be disregarded for the purpose of constituting a quorum of the Board for any deliberation or decision referred to in subsection (a).
- (4) A person has an interest in a matter where that person—
 - (a) could benefit directly or indirectly from a decision on a matter over which he or she has influence or control, or if a matter over which that member has influence or control relates in any way to—
 - (i) a business or property the member directly or indirectly owns or controls;

- (ii) a business or property owned or controlled, directly or indirectly, by a family member;
- (iii) a business or property in which the member has a beneficial interest of any kind, whether through a trust or otherwise;
- (b) is party to, or will or may derive a material financial benefit from the matter;
- (c) has a material financial interest in another party to the matter;
- (d) is a family member of a person who will or may derive financial benefit from the matter; or
- (e) is otherwise directly or indirectly materially interested in the transaction.
- (5) In this section, the following terms shall have the meanings stated—

"benefit" shall mean gain or advantage of any kind, and shall include financial gain, property, service, or improvement of condition;

"business" shall mean businesses of any kind whether situated in the Republic of Kenya or elsewhere and whether incorporated or not;

"family member" shall mean a parent, brother, sister, spouse, cousin, aunt, uncle, nephew, niece or child including a person who is adopted legally or for whom care was given by the member such that there exists a relationship in the nature of parent and child, and shall also mean a spouse of any person referred to in this definition and their children and any other member of a person's immediate family;

"interest" shall mean either direct ownership of, indirect ownership of, shares in financial benefit from, remuneration, fees or commissions from, or complete or partial control of, such property or business;

"member" or "member of the Board" means any member of the Board of Directors;

"property" shall mean real or personal property of every description whether situated in the Republic of Kenya or elsewhere.

Meetings of the

Roard

- 14. (1) The Board shall meet not less than four times in every financial year, and not more than four months shall elapse between the date of one meeting and the date of the next meeting and the date for each meeting shall be confirmed not less than five working days in advance of such meeting.
- (2) Special meetings shall be convened upon a written request by the Chairperson of the Board or not less than four members, and in accordance with such other procedures as the Board may agree in by-laws:

Provided that at least five working days' notice of the meeting shall be given to every member.

- (3) At a meeting of the Board—
- (a) five members, one of whom shall be the Chairperson or his or her nominee, constitute a quorum;
- (b) the Chairperson, or in his or her absence the Deputy Chairperson, shall preside, and if both the Chairperson and the Deputy Chairperson are absent, the members present shall appoint, from among their own number, a Chairperson for that meeting;
- (c) matters arising shall be decided by a majority of the votes of the members present and voting; and
- (d) the person presiding has a deliberative, and in the event of an equality of votes on any matter, also a casting vote.
- (4) The Chairperson may nominate an employee of the Service to attend any Board meeting and present any matter or introduce any item of business, but shall not be entitled to vote or be counted towards a quorum.
- (5) The Board shall cause minutes of its meetings to be recorded and kept.
- (6) The Board may, in its discretion at any of its meetings-
 - (a) invite a person or persons to attend; or
 - (b) receive or hear submissions or information from any person.

- (7) The Board shall establish a consultative process with the stakeholders in order that information and views on relevant fisheries management may be exchanged as appropriate, and the Board shall take into account any information or views received from stakeholders through such process when considering management measures relevant to those stakeholders.
- (8) The Board may from time to time, establish such advisory sub-committees as it considers necessary in relation to its functions and powers for the purpose of making reports and recommendations to the Board and sub-committees shall be comprised of Board members.
- (9) Any decision of a sub-committee established by the Board under sub-section (8) shall be subject to ratification by a fully constituted Board meeting.
- (10) Subject to this Act, the procedures of the Board are as determined by the Board.
- 15. (1) There shall be a Director-General of the Service who shall be competitively recruited by the Board openly and transparently, and on such terms and conditions as may be specified in the instrument of appointment.
- (2) A person shall be qualified to be appointed under subsection (1) if such person holds an advanced degree from a recognized university in—
 - (a) natural resource or environmental management, or science;
 - (b) fisheries studies, including fisheries governance, management, development or science;
 - (c) aquatic science; or
 - (d) any other related field,

and has at least ten years' experience in a senior management position in a public institution.

Appointment of the Director-General.

2016

Functions of the

Director-General.

- 16. (1) The Director-General shall be the chief executive officer of the Service and shall be responsible to the Board for the day-to-day management of the affairs of the Service and shall, on behalf of the Board and subject to this Act, have the general superintendence of all matters within the scope of this Act.
- (2) Without prejudice to the generality of the foregoing, the Director-General shall—
 - (a) be responsible for carrying out the functions, managing the affairs and exercising the powers of the Service:
 - (b) ensure efficient and effective administration of the Service, including through the preparation of annual work plans and development strategies for the Service;
 - (c) recommend to the Board the recruitment of competent human resources for the Service;
 - (d) collaborate with the Fish Marketing Authority established under section 204 and other agencies to identify marketing and investment opportunities for the fisheries sector;
 - (e) upon direction by the Board, enter into agreements on behalf of the Service for the management, conservation, use and exploitation of fisheries resources; and
 - (f) perform such other functions as the Board may in consultation with the Cabinet Secretary direct from time to time.
- (3) The Director-General may, in writing, delegate the exercise of any of the powers and functions conferred on him by this Act to the Director or any other staff member of the Service as may be approved by the Board, except this power of delegation.
- 17. (1) The Board may, on such terms and conditions as it deems fit, appoint—

Other staff of the Service.

- (a) such officers of the Service as are specified in Part A of the First Schedule; and
- (b) such disciplined officers of the unit established under section 20 as are specified in Part B of the First Schedule; and

- (c) such other employees, agents, servants or consultants of the Service, as may be necessary for the performance of the functions of the Service.
- (2) Every person appointed under subsection (1) (b) shall take and subscribe to the oath of allegiance set out in Part C of the First Schedule.
- (3) The provisions Part D of the First Schedule have effect with respect to the Service.
- (4) The Board shall within a reasonable time provide for a staff superannuation scheme to determine service for the employees of the Service.
- 18. (1) The Cabinet Secretary may, in consultation with the Council and the Director- General and with the approval of the Board, by notice in the Gazette appoint a police officer of or above the rank of an inspector, or an officer with the Kenya Navy or other armed force to be an authorised officer for purposes of this Act.
- (2) A person appointed under subsection (1) shall perform such functions as the Board may specify.
- 19. (1) The Director-General may, with the approval of the Board, by notice in the Gazette appoint suitable persons to be honorary fisheries officers for the purpose of assisting the Service in carrying into effect the provisions of this Act.
 - (2) An honorary fisheries officer shall—
 - (a) hold office subject to such conditions as the Director may prescribe, for a period of five years;
 and
 - (b) have such functions as may be prescribed by rules made under this Act.
- **20.** (1) There is hereby established within the Service Monitoring, Control and Surveillance Unit (MCS) hereinafter referred to as "the MCS Unit".
 - (2) The MCS Unit shall have the functions of—
 - (a) monitoring, control and surveillance, including enforcement, and compliance with this Act and any other legislation relating to activities falling within the scope of this Act; and

Authorized officers.

2016

Honorary fisheries

Establishment of Monitoring, Control and Surveillance Unit.

- (b) cooperating and coordinating with. performing relevant functions within the broader system of monitoring, control and surveillance at bilateral, sub-regional, regional and international levels to implement agreements or measures which are binding upon Kenya or which the Cabinet Secretary, as appropriate in consultation with the Cabinet Secretaries responsible for internal security and defence, directs subject to the Treaty Making and Ratification Act, 2013.
- (3) The MCS Unit shall include the officers specified in Part B of the First Schedule, and such other persons or categories of officers as may be appointed by the Cabinet Secretary by notice in the Gazette from time to time.
- (4) In addition to the provisions in Part XIII of this Act relating to the powers of authorized officers, the Cabinet Secretary may by notice in the Gazette provide for-
 - (a) the organization and deployment of the Unit;
 - (b) the duties to be performed by members of the Unit, and their guidance in the discharge of those duties:
 - (c) the regulation of matters relating to discipline in the Unit;
 - (d) the description and issue of arms, ammunition accoutrements, uniforms and other necessary supplies to members of the Unit; and
 - (e) matters relating generally to the good order and administration of the Unit.
- 21. (1) The Cabinet Secretary may make regulations Inter-agency monitoring control and surveillance establishing and assigning functions to an inter-agency unit. monitoring control and surveillance unit ("the Inter-agency MCS Unit").

- (2) The Inter-agency MCS Unit shall comprise members specified in Part D of the First Schedule and such other persons as the Cabinet Secretary may co-opt thereto.
- (3) The principal function of the inter-agency MCS Unit shall be to ensure coordinated and effective interagency enforcement of and compliance with this Act.

(4) The Director-General shall serve as the chairperson and the Service shall be the secretariat of the Inter-agency MCS Unit.

PART IV—FINANCIAL AND ADMINISTRATIVE PROVISIONS

22. (1) The funds of the Service shall consist of—

Funds of the Service

- (a) such monies as may be appropriated by Parliament;
- (b) such monies or assets as may accrue to or vest in the Service in the course of the exercise of its powers and the performance of its functions under this Act; and
- (c) all monies from any other source provided for or donated or lent to the Service.
- (2) The moneys of the Service shall be expended in accordance with this Act, and only in payment for—
 - (a) discharge of expenses, obligations and liabilities of the Service:
 - (b) the remuneration of the staff of the Service and for allowances to the members of the Board;
 - (c) contracts for technical consultants, observers, researchers and other personnel, activities or operations which support the functions and programmes of the Service;
 - (d) travel expenses relating to official;
 - (e) training and education courses or programmes for purposes relating to the objectives of the Service, and the functions and programmes of the Service;
 - (f) financial assistance for management and development activities in the Counties consistent with the functions of the Service;
 - (g) grants to institutions, agencies, associations or other organizations for the purpose of promoting fisheries conservation and management;
 - (h) rewards for information leading to convictions for offences under this Act in accordance with such requirements as may be prescribed;

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- (i) purchase of capital items necessary to carry out the functions and duties of the Service:
- (j) contributions to donor aid projects as agreed with the donor agency; and
- (k) such other purposes as are consistent with the functions and powers of the Service as the Board, after consultation with the Director-General, shall determine.
- (3) The Service may make such investments as the Board may approve, subject to the approval of the Cabinet Secretary for the time being responsible for matters relating to finance.
- (4) The Service may open and maintain an account with a bank approved by the National Treasury under the Public Finance and Management Act, 2012 and shall at all times maintain one account and shall pay all its moneys into such account.
- 23. The financial year of the Service shall be the period of twelve months ending on the thirtieth June in each year.

Financial Year.

24. (1)At least three months before the commencement of each financial year, the Board shall cause to be prepared estimates of the revenue and expenditure of the Service for that year.

Annual estimates.

- (2) The annual estimates shall make provision for all the estimated expenditure of the Service for the financial year concerned, and in particular shall provide for—
 - (a) the payment of salaries, allowances and other charges in respect of the staff and members of the Service;
 - (b) the payment of pensions, gratuities and other charges in respect of retirement benefits which are payable out of the funds of the Service; and
 - (c) the acquisition, maintenance, and repair and replacement of the equipment and other movable property of the Service.
- (3) No expenditure shall be incurred for the purpose of the Service except in accordance with the annual estimates approved under subsection (2).

25. (1) The Board shall cause to be kept proper books and records of account of its income, expenditure and assets of the Service.

2016

Accounts and audit.

Act No. 34 of 2015.

- (2) The accounts of the Service shall be audited and reported upon in accordance with the Public Audit Act, 2015.
- **26.** (1) The Director-General shall, within four months after close of each fiscal year, furnish to the Board—

Director-General to report to the Board.

- (a) an annual report on the progress and the performance of the Service in relation to its functions and the exercise of its powers; and
- (b) a financial report, audited by an auditor appointed by the Board, for the year ended 30th June previously in accordance with the requirements in section 26(2).
- (2) The financial reports of the Service shall be recorded under an "accrual basis" of accounting in accordance with accounting principles generally applied in commercial practice.
- (3) The Board shall consider and as appropriate endorse the reports required under subsection (1) as soon as practicable after receiving them, and transmit them through the Cabinet Secretary to the National Assembly
- (4) The Cabinet Secretary shall transmit the reports required under subsection (1) to the Speaker for presentation to Parliament.
- (5) The Service shall ensure that the reports required pursuant to subsection (1) are available to the public or other government agencies upon the presentation to Parliament.
- 27. (1) There is established a fund to be known as the Fisheries Research and Development Fund which shall be administered by the Director-General.

Fisheries Research and Development Fund.

- (2) There shall be paid into the Fund—
 - (a) such monies as may be provided by Parliament;
 - (b) donations made to the Service from any source for purposes of the Fund, and
 - (c) royalties paid to the Service:

Provided that the Service shall not accept any grant, gift, donation or bequest made on any condition that the Service performs or discharges any duty or obligation other than duties or obligations imposed by this Act.

- (3) The object of the fund shall be to provide supplementary funding for research intended to further the development of fisheries management, capacity building, scholarships, grants and support for the observer programme established under section 147.
- (4) The Cabinet Secretary may by notice in the Gazette provide for the mode of administration of the Fund established under sub-section (1).
- **28.** (1) There is hereby established a fund to be known Fish Levy Trust Fund. as the Fish Levy Trust Fund.
 - (2) The Fish Levy Trust Fund shall consist of —
 - (a) a levy imposed by the Cabinet Secretary under section 28 by Order to require the payment of levies by persons engaged in fishing or fishing related activities of a fish levy ("the levy") which may provide requirements relating, inter alia, to activities within the scope of this Act; and the evidence by which a person's liability to pay the levy, or the payment thereof, may be established, and the time at which any amount shall become payable.
 - (b) donations made to the Service from any source for purposes of the Fund; and
 - (c) such other sums of money or other assets as may be specifically designated to the Fish Levy Trust Fund by the Service out of its general fund.
- (3) The object of the fund shall be to provide supplementary funding of activities geared towards management, development and capacity building, awards and urgent mitigation to ensure sustainability of the fisheries resource.
- (4) The Trust shall be administered by a five member Board of Trustees nominated through an open and competitive process and they shall meet the requirements of Chapter six of the Constitution.

- (5) The members of the Board of Trustees shall include—
 - (a) two fisherpersons from fresh waters and marine waters;
 - (b) two persons nominated by the traders exporters association and fish processors; and
 - (c) one person appointed by the Cabinet Secretary responsible for fishing with background in aquatic science.

PART V—FISHERIES CONSERVATION, MANAGEMENT AND DEVELOPMENT

29. (1) All fisheries resources vest in the State and shall be conserved, managed and developed consistently with this Act, including its objective and principles, and acknowledging their role as the heritage of the people of Kenya.

Fisheries vest in the State.

2016

(2) Nothing in this Act shall be deemed to prevent any member of the community from using, subject to such conditions as may be prescribed under this Act, such fisheries or fisheries resources as it has been the custom of that community to use.

Fisheries Development Measures

30. The Director-General may, in consultation with County governments, other appropriate agencies and other departments of Government, promote the development of activities within the scope of this Act, through, *inter alia*—

Fisheries development measures.

- (a) providing a national framework of extension and training services;
- (b) conducting research and surveys;
- (c) promoting co-operation among fishers;
- (d) spearheading arrangements for the orderly marketing of fish;
- (e) stocking waters with fish and supplying fish for stocking;
- (f) promoting the adoption of alternative means of livelihood amongst fishers;
- (g) promoting the development of ornamental fisheries;

- (h) promote the development of other sustainable methods of *insitu* and *exsitu* fishing;
- (i) providing for the establishment of investor friendly licensing and approval systems;
- (j) developing a comprehensive fish marketing, system, including fish auction, through strengthening linkages along the market value chain;
- (k) encouraging persons in the private sector to organize into associations and form a national coordinating mechanism to ensure efficient marketing systems that that adhere to sanitary and phytosanitary requirements;
- (l) facilitating participation in national, regional and international trade negotiations and meetings;
- (m) promoting value addition and utilization of fish by-products and bycatch;
- (n) providing for the establishment of accredited fish safety and quality control laboratories and other infrastructural facilities; and
- (o) such other measures and actions as may be approved by the Board.

International fisheries conservation and management measures

31. (1) The Director-General shall by notice in the Gazette give notice of any international conservation and management measures recognized by Kenya for the purposes of this Act.

Notification by the Director-General.

- (2) A notice under subsection (1) shall append the relevant agreement or arrangement, or international conservation and management measure.
- 32. (1) Where the Director-General has reason to suspect that a foreign fishing vessel is, or has been, involved in the contravention of an international conservation or management measure in areas beyond the national jurisdiction of Kenya, the Director-General may, and in cases where such measure has been notified pursuant to section 31(1)—

Implementation of international conservation and management measures.

- (a) provide to the appropriate authorities of the flag State, relevant coastal States, relevant regional fisheries management organization and others as appropriate, relevant information, including any available evidence, relating to such contravention;
- (b) request immediate investigations by the flag State;
- (c) when such foreign fishing vessel is in a port in Kenya, promptly notify the appropriate authorities of the flag State of the vessel accordingly; and
- (d) take additional measures in conformity with international law, including such measures as the flag State of the vessel has expressly requested or to which it has consented and any measures agreed through the relevant regional fisheries management organization.

Co-ordination of Fisheries Management with the Counties

33. (1) The Director-General shall ensure that all County Governments are consulted and kept informed of relevant management measures and processes taken pursuant to this Act.

Director-General to keep Counties informed of management measures, processes.

2016

- (2) Each County shall collaborate with the Director-General in the management of fisheries and shall, for this purpose ensure that the Director-General is informed, by effective means of communication, of relevant developments in relation to the management of fisheries within the County.
- **34.** (1) Each County may develop fisheries management measures and plans for fisheries resources within its jurisdiction as provided in the Fourth Schedule to the Constitution.
- (2) In developing the management measures and plans, referred to in subsection (1), the relevant authorities in the County shall take steps to ensure that such plans and measures are consistent with the provisions of this Act, including its objective and principles, and that they take into account relevant measures taken, information and data available, and the economic and social value of the resource pursuant to this Act.

County may develop fisheries management plans.

County to submit

management plans to Director-General for endorsement.

fisheries

- 35. Each fisheries management plan developed by authorities in each County shall—
 - (a) take into consideration, to the extent possible, elements of a fisheries management plan described in section 39; and
 - (b) take into account any recommendations that may be made by the Director-General with respect to the plan.
- **36.** (1) Where there is any conflict between a County fisheries management plan and the management-related provisions of this Act, the Director-General shall consult with the County government and give appropriate direction.

Relations between National and County governments.

- (2) Where the Director-General is of the opinion, based on information from the implementing officer, that the County government has conducted its affairs in relation to fisheries management in a manner which is contrary to the provisions of this Act, the Director-General shall, with the approval of the Board—
 - (a) serve the County government with a notice requiring it to take specified action within a specified period to rectify and improve the fisheries management, and
 - (b) if the County government does not take action as required, the Director-General shall prepare a report and submit to the Cabinet Secretary with recommendations on the action to be taken.
- 37. (1) The Cabinet Secretary may for purposes of ensuring structured community participation in fisheries management, make regulations setting out standards for the management of beach management units established by the county governments.
- (2) Regulations made under subsection (1) may provide, *inter alia*, in respect of the beach management units, for—
 - (a) objectives, structure, areas of jurisdiction and mandate in co-management;
 - (b) minimum standards in the general administration of the beach management units;

Establishment of Beach Management

- (c) standards to be adhered to by beach management units in imposing levies and charges and the management and utilization of such funds;
- (d) such other standards which the Cabinet Secretary may consider necessary for the effective administration and management of the beach management unit;
- (e) the protection of vulnerable groups, especially youth and women; and
- (f) processes necessary to ensure that not more than two thirds of Beach Management Units are of the same gender and to ensure the inclusion of youth and persons with disability in leadership.

Fisheries Conservation and Management

38. The Director-General shall be responsible for planning for the conservation, management, development and sustainable use of all fish and fisheries within Kenya fishery waters.

Responsibility for planning fisheries management.

2016

39. (1) The Board may, in consultation with the Council of Governors and on the recommendation of the Director-General, declare a fishery as a designated fishery where, having regard to scientific, economic, cultural, environmental and other relevant considerations, it is determined that the fishery—

Fisheries management plans.

- (a) is important to the national interest; and
- (b) requires special conservation and management measures for effective sustainable use of the fisheries resources.
- (2) The Director-General shall, in consultation with the relevant county governments—
 - (a) prepare, keep under review and be responsible for the implementation of fisheries management plans for the conservation management, development and sustainable use of each designated fishery in the Kenya fishery waters;
 - (b) prepare, keep under review and be responsible for the implementation of fisheries management plans for any other fisheries in the Kenya fishery waters as may be necessary and practicable; and
 - (c) determine the priority for the preparation of fisheries management plans, taking into account

the advice of any committee established and carrying out functions under this Act and of other relevant stakeholders.

- (3) The Director General shall, in consultation with the counties and other stakeholders, develop guidelines and standards for the development of fisheries management plans that must conform to this Act and shall include—
 - (a) identification of the fisheries resource and its characteristics, including its economic and social value and interrelationship with other species in the ecosystem;
 - (b) an assessment of the present state of exploitation of the fisheries resource and potential average annual yields;
 - (c) the objectives to be achieved in the management and development of the fishery;
 - (d) the best information on all relevant biological, social, economic and other applicable factors, determine the maximum sustainable yield;
 - (e) the measures, if any, to be taken to promote the development of Kenya fisheries;
 - (f) any relevant traditional fishing rights, methods or principles;
 - (g) the impact of the plan upon the fishery or fisheries involved, associated and dependent species, habitat, the ecosystem in general and any other area determined relevant;
 - (h) management measures;
 - (i) any research necessary to enhance management of the fisheries;
 - (j)the information and other data required to be given or reported for effective management and development;
 - (k) an implementation strategy which explains how the objectives are to be achieved including through stakeholder consultations;
 - (1) a plan for monitoring and assessment of the implementation of the fisheries management plan;

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 - (m) a process for amending or repealing the plan, including the consultation and other processes to be followed; and
 - (n) social impact assessment of the plan with reference to disadvantaged groups including women, persons with disability and the youth.
- (4) The Director-General shall, during the preparation of each fisheries management plan, consult as required and appropriate with any committee which may be established and performing its functions under this Act and stakeholders that may be affected by the plan.
- (5) The Director-General shall consult wherever practicable with the appropriate fisheries management authorities of other States in the region, and in particular with those sharing the same or interrelated stocks, with a view to ensuring the harmonization of their respective fisheries management plans and fisheries management in general.
- (6) Each fisheries management plan or review shall come into force upon its publication in the Gazette.
- (7) The management measures in each fisheries management plan shall have the legal force of regulations made pursuant to this Act.
- (8) Any person who engages in fishing or fishing related activities in the Kenya fishery waters or who processes or sells fish taken from the fishing waters shall supply such information in respect of such activities as the Director-General may require in accordance with a fisheries management plan.
- (9) Any person who fails to comply with the management plan commits an offence and shall be liable—
 - (a) in case of industrial fishing, to a fine not exceeding five hundred thousand shillings; or
 - (b) in case of artisanal fishing, to a fine not exceeding one hundred thousand shillings.
- (10) Any person who fails to supply information required under sub section (8) commits an offence and shall be liable on conviction to a fine of two hundred and fifty thousand shillings or to a term of imprisonment in respect of artisanal fishing not exceeding three months, and

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Fisheries

measures

management

in respect of all other activities not exceeding six months or both.

- **40.** (1) The Director-General may in accordance with the best scientific advice and such other relevant information as may be available, with the approval of the Cabinet Secretary, by notice in the Gazette, impose, *inter alia*, any of the following measures for the conservation and management of any fishery—
 - (a) closed seasons and or areas for species of fish or methods of fishing provided that customary fishing rights are protected;
 - (b) prohibited fishing areas for all or designated species of fish or methods of fishing;
 - (c) limitations on the types of gear, including mesh sizes of nets, that may be used for fishing;
 - (d) limitations on the types and/or number of fishing vessels permitted to engage in fishing provided that customary fishing rights are protected;
 - (e) limitations on the amount, size, age and other characteristics and species or composition of species, of fish that may be caught, landed or traded;
 - (f) regulate the landing of fish and provide for the management of fishing ports, including fish landing stations;
 - (g) control of the introduction into, or harvesting or removal from Kenya fishery waters of any species of fish, including aquatic plants;
 - (h) define and identify fragile aquatic ecosystems and provide structures to enable collaborative protection;
 - (i) regulate trade in endangered species of fish and fish products;
 - (j) prohibit the possession, trade in or manufacture of prohibited gear in a specified area or areas; and
 - (k) any other measures consistent with the objective and principles of this Act.
- (2) Any person who contravenes the provisions of a notice issued under this section commits an offence and is liable on conviction to a fine not exceeding five hundred

thousand shillings or imprisonment for a term not exceeding one year or to both in respect of industrial fishing, and to a fine not exceeding twenty thousand shillings or imprisonment for a term not exceeding three months or to both in respect of artisanal fishing.

- (3) The measures referred to in this section may include—
 - (a) refusal to issue or renew licences;
 - (b) imposition of special licence or catch fees; and
 - (c) preferential licencing.
- 41. (1) The Director-General may take fisheries management measures to limit fishing and fishing related activities in accordance with the objective and principles of this Act and shall communicate such measures by notice in writing to the persons affected.

Limitation of fishing and fishing related activities

2016

- (2) A person aggrieved by the action taken by the Director-General pursuant to subsection (1) may appeal in writing to the Cabinet Secretary.
- **42.** (1)No person shall use, permit to be used or attempt to use or carry on board a vessel-

Prohibited fishing gear and methods.

- (a) fishing gear that has not been authorized by a valid and applicable licence issued pursuant to this Act for the purpose of fishing unless otherwise provided in this Act;
- (b) any fish aggregating device unless an authorization has been issued in accordance with this Act;
- (c) a trawl net or other net the mesh of which is less in stretched diagonal length than the prescribed mesh size:
- (d) the method of pair trawling for the purpose of fishing;
- (e) monofilament net for the purpose of fishing;
- (f) more than one net at a time for the purpose of fishing with trawl net;
- (g) attachments to any trawl net except as may be prescribed;
- (h) a gill net, whether drifting or set, in any river or body of water forming part of the riverine system

- if the mesh of the net is less than forty- five millimeters in stretched diagonal length;
- (i) a seine net the mesh of which is less than fortyfive millimetres in stretched diagonal length;
- (j) a beach seine net for the purpose of fishing;
- (k) a seine net in any body forming part of the riverine system;
- (1) firearms or other electrical shock devices for the purpose of fishing including stunning, disabling or killing fish or in any way rendering fish to be caught easily; or
- (m)such other gear as may be prescribed or prohibited by regulations established under this Part.
- (2) Unless otherwise prescribed, no person shall use for fishing, from an industrial fishing vessel, any net or combination of nets the mesh of which is less than—
 - (a) sixty millimetres in stretched diagonal length for the meshes forming the cod-end of the net for demersal trawl nets;
 - (b) forty-five millimetres in stretched diagonal length for the meshes in the cod-end for catching shrimp and other shellfish;
 - (c) forty-five millimetres in stretched diagonal length for seine nets; and
 - (d) in the case of a trawl net, where the sides of the net are less than the mesh of the cod-end.
- (3) No person shall use on an industrial fishing vessel a bottom trawl in coastal waters of less than fifteen meters depth.
- (4) No person shall, for the purpose of fishing, set any net across any river from bank to bank so as to form a barrier.
 - (5) No person shall—
 - (a) permit to be used, use or attempt to use any explosive, poison or other noxious substance for the purpose of killing, stunning, disabling or catching fish, or in any way rendering fish more easily caught; or

- (b) carry or have in possession or control any explosive, electric shock device, poison or other noxious substance in circumstances indicating an intention of using such substance for any of the purposes referred to in subparagraph (a).
- (6) Any explosive, electric shock device, poison or other noxious substance found on board any fishing vessel shall be presumed, unless the contrary is proved, to be intended for the purposes referred to in paragraph (1) (a) of subsection (42).
- (7) A person who contravenes any of the provisions of this section commits an offence and shall be liable on conviction to a fine not exceeding five million shillings or to a term of imprisonment not exceeding three years or to both in respect of industrial fishing and to a fine not exceeding one hundred thousand shillings or to imprisonment for a term not exceeding three months or to both in respect to artisanal fishing.
- 43. (1) No person shall while using a vessel, wilfully and negligently damage, destroy, interfere with, endanger or cause injury in respect of—
 - (a) any fishing gear that he or she does not own or use or that is not associated with such vessel;
 - (b) any other vessel and/or persons thereon; or
 - (c) any persons on any other vessel or otherwise in the Kenya fishery waters.
- (2) Where a vessel becomes entangled with fixed fishing gear or other object referred to in subsection (1), the master shall-
 - (a) undertake to minimize any damage caused by the gear;
 - (b) where practicable return the gear to the sea and log the position; and
 - (c) make a full report of the incident and steps taken by him or her to the Director General at the earliest opportunity.
- (3) Where events referred to in subsection (1) or (2) occur, the master shall, immediately—

Damage, destruction to and interference with fishing gear, vessel, person prohibited.

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- (a) where any person has been injured or harmed in any way—
 - (i) rescue such person from the sea;
 - (ii) administer all possible first aid or medical treatment; and
 - (iii) steam directly to shore and seek further medical treatment;
- (b) where there has been a death of a person, recover the body and bring it directly to port; and
- (c) make full report of the incident and steps taken to the police.
- (4) A person who contravenes sub-section (1), (2) or (3) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term for a term of imprisonment not exceeding one year or to both, and in addition that person shall fully compensate the owner of the fishing gear for any damage or injury caused under civil law as a consequence of the action unless there is sufficient proof that the damage, destruction, interference or endangerment took place in an area where the person or vessel that caused such consequence were legally entitled vessel that caused such consequence were legally entitled to be at that time and it was not reasonably possible to detect the fishing gear or vessel and any relevant fishing gear was not marked in accordance with the requirements pursuant to this Act.
- (5) Where human life is lost as a consequence of any negligent or wilful action under sub-section (1), the responsible person shall be liable on conviction to a fine not exceeding one million shillings or imprisonment to a term not exceeding ten years or to both, and in addition that person shall compensate the estate of the deceased under civil law.
- (6) Each person making a claim for compensation pursuant to subsection (4) shall do so within a period of three years.
- 44. (1) No person shall dump gear, moorings or other objects in the sea or leave unnecessarily or abandon such objects in the sea or on the seabed if they may adversely affect fish or other marine organisms including by

Leaving or abandoning objects in the sea Prohibited. continuing to enmesh, trap or otherwise catch fish, impede harvesting operations, damage harvesting gear or endanger vessels.

- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding three years, or to both, and in addition such person shall be responsible for the full cost of clearing or removing the relevant objects in respect of industrial fishing or to a fine not exceeding fifty thousand shillings or to a term of imprisonment not exceeding three months in respect of artisanal fishing.
- 45. (1) The Cabinet Secretary may, by notice in the Gazette, declare any species of fish to be endangered or threatened with extinction, and shall, to the extent possible, include those species relevant to Kenya that have been declared endangered or threatened under any international agreement or instrument to which Kenya is party.
- (2) Unless otherwise provided by the Cabinet Secretary, no person shall engage in fishing for, catch, possess, transport, process, buy or sell any species of fish declared endangered or threatened with extinction pursuant to subsection (1).
- (3) A person who contravenes sub-section (2) commits an offence and shall be liable on conviction to—
 - (a) a fine not exceeding two hundred and fifty thousand shillings or to a term of imprisonment not exceeding three years or to both in respect of industrial fishing; or
 - (b) a fine not exceeding fifty thousand shillings or a term of imprisonment not exceeding six months in respect of artisanal fishing.
- (4) Where a species of fish has been declared as endangered under subsection (1), the Cabinet Secretary shall take special measures for its protection.
- 46. (1) Subject to subsection (3), no person shall engage in fishing for marine mammals in the Kenya fishery waters or use any port in Kenya for the purpose of control or supplying a vessel intended to be used for fishing ar marine mammals.

Declaration of endangered species of fish

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Prohibitions and requirements for marine mammals.

- (2) Any marine mammal caught either intentionally or unintentionally shall be released immediately and returned to the waters from which it was taken with the least possible injury.
- (3) The Director General may give written authorization to fish for marine mammals in a limited manner for research purposes.
- (4) A person who contravenes subsection (1) or (2) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding three years or to both.
- 47.(1) The Cabinet Secretary may, in consultation with the Kenya Fisheries Advisory Council, stakeholders and the Board, by notice in the Gazette, declare any area of the Kenya fishery waters to be a Marine Protected Area, and shall, as part of such declaration, identify its components including the following—

Marine Protected Areas.

- (a) area;
- (b) boundaries;
- (c) purpose;
- (d) objective;
- (e) a mandate for total or partial regulation;
- (f) management measures;
- (g) decision-making responsibilities;
- (h) procedures for the coordination of stakeholders;
- (i) procedures for conflict resolution;
- (j) procedures for monitoring and review.
- (2) The Cabinet Secretary may, subject to approval by the National Assembly, make regulations to give effect to this section.
- 48. (1) Any person or Government Ministry or other agency that plans to conduct any activity other than fishing which is likely to have an adverse impact on fish and their habitat, shall apply to the Director-General in the prescribed form prior to the commencement of the planned activity with a view to ensuring the conservation and protection of such resources.

Fisheries impact assessments.

- (2) Where an application is made under subsection (1), the Director General shall refer the matter to the National Management Authority who shall give a report regarding the likely impact of such activity on the fishery resources, including theirs habitat and possible means of preventing or minimizing adverse impact.
- (3) Any report or recommendation prepared in accordance with subsection (2) shall be taken into account by the relevant person, Government Department or other agency in the planning of the activity and in the development of means of preventing or minimising any adverse impacts.
- (4) Any report made under sub-section (2) shall be completed within six months of making the application.
- (5) Any person who violated any provisions of this section commits an offence and shall be liable on conviction to a fine not exceeding one million shillings or to imprisonment for a term not exceeding three years or to both and in addition such a person shall be liable to pay compensation in respect of any resulting loss or damage as well as full cost of restoring the affected habitat to its previous state.
- 49.(1) No person shall prepare for the introduction of, attempt to introduce or introduce into the Kenya fishery waters, directly, indirectly, deliberately, any deleterious article or substance, including articles or substances which may have toxic, hazardous or other harmful properties or effects in relation to fish or the marine environment, and which may adversely affect the habitat or health of the fish.
- (2) A person who contravenes subsection (1) is guilty of an offence and shall be liable on conviction to fine not exceeding five million shillings or to a term of imprisonment not exceeding ten years or to both, and in addition shall be liable to pay compensation in respect of any resulting loss or damage as well as the full cost of restoring the affected habitat and fishery resources to their previous state.
- (3) The Director- General may suspend or cancel the licence of a vessel to which this section applies until such time as all fines, penalties and damages have been satisfied.

Pollution of the Kenya Fishery Waters.

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- (4) Notwithstanding subsection (2), in the event of an accidental introduction into the Kenya fishery waters of any deleterious article or substance prohibited in subsection (1), or in the event of encountering such articles, the owner, operator or master of the vessel shall immediately report the incident to the Director-General giving the following information to the extent possible—
 - (a) the name of the reporting person and, as appropriate, the name and call sign, if any, of the vessel from which the introduction or encounter occurred;
 - (b) the nature of the article disposed or encountered;
 - (c) the location of the article or substance; and
 - (d) the time and date of the incident.
- (5) Unless it is provided otherwise, the provisions of section 93 of the Environmental Management and Coordination Act, 1999, shall apply to offences involving discharge of pollutants under this Act.

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Fish landing

- 50. (1) The Cabinet Secretary may, on the recommendation of the Director-General as endorsed by the Board establish by a notice in the Gazette—
 - (a) fish landing stations,
 - (b) designated fishing ports, and
 - (c) protected fish breeding grounds.
- (2) Notwithstanding subsection (1), the areas specified in the Second Schedule are declared to be designated fishing ports, with effect from the date of the commencement of this Act.
- (3) No person other than a sport fisherman shall land any fish at any point except at a fish landing station or port.
- (4) A person who contravenes the provisions of subsection (3) commits an offence and shall be liable on conviction to a fine not exceeding twenty thousand shillings or to imprisonment for a term not exceeding three months or to both in case of fish landing stations or to a fine not exceeding one hundred thousand shillings or to imprisonment for a term not exceeding six months or to both in case of ports.

Placing of live fish.

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- 51. (1) No person shall place or, by act of omission or otherwise, cause to be placed, any species of live fish in any place in Kenya fishery waters without authorization issued in writing by the Director General, except where—
 - (a) the fish species being so placed previously occurred in the same body of water prior to being fished therefrom; or
 - (b) a fish farmer is stocking his pond with fish obtained from another fish farmer with whom he shares the same water catchment area.
- (2) Any person who contravenes this section commits an offence and is liable on conviction to a fine not exceeding three hundred and fifty thousand shillings or to imprisonment for a term not exceeding two years, or to both.
- 52. (1) In addition to the information requirements specified in Part VIII, the Director-General may by notice in writing direct any person whom he is satisfied is suitably qualified to undertake the periodic stock assessment of all the fishery waters and collect and analyze statistical and other data and information on activities under the scope of this Act and forward the same to the Board.
- Director-General to direct stock assessments, collection and analysis of other information and forward to the Board
- (2) In addition to the requirements set out in Part VIII, any data collected pursuant to this section shall be maintained in a database in such form as the Director-General may determine.
- (3) Any person who contravenes the provisions of a notice issued under this section commits an offence and is liable on conviction to a fine not exceeding one hundred thousand shillings or to imprisonment for a term not exceeding one year or to both.
- 53. (1) No person shall, within Kenya or in the fishery waters, on their own account or any other capacity—
 - (a) cause or permit a person acting on his or her behalf, or
 - (b) use or permit a vessel to engage in fishing or related activity.

to take, import, export, tranship, land, transport, sell, receive, acquire or buy any fish or fish product taken,

Prohibited activities relating to fish or fish products taken contrary to the laws of another State.

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possessed, transported or sold in violation of any law or regulation of another State or of international conservation and management measures in line with section 31 of this Act.

- (2) This section does not apply to fish taken on the high seas contrary to the law of another State where Kenya does not recognise the jurisdiction of that State over those fish except to vessels flying Kenya's flag or to areas where the boundaries are disputed or not clear.
- (3) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to—
 - (a) a fine not exceeding five million shillings or to a term of imprisonment not exceeding five years or to both, in relation to industrial fishing; or
 - (b) a fine not exceeding one hundred thousand shillings or to imprisonment for term not exceeding six months or to both, in relation to artisanal fishing.

PART VI—IMPORT, EXPORT AND TRADE AND MARKETING OF FISH AND FISH PRODUCTS

- **54.** (1) No person shall import any live fish into Kenya without the written approval of the Director-General and in accordance with such procedures as may be prescribed and the approval shall only be given upon production of an environmental impact assessment report on the effect of each introduction.
- Import and release of live fish.

- (2) No person shall release any live fish imported into Kenya into the fishery waters except with the written approval of the Director-General.
- (3) The Director-General shall not approve any release of live fish unless the fish has been kept under observation and control for such period and on such terms and conditions as the Director-General thinks fit.
- (4) Where the Director-General is satisfied that any fish which has been imported into Kenya is unsuitable for the purpose of release the Director may order the fish to be forfeited and destroyed.
- (5) The importer and exporter of any fish destroyed under subsection (4) shall not be entitled to compensation.

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55. (1) No person shall export any live fish from Kenya except in accordance with regulations.

Export of live fish.

- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding three years or to both.
- 56. (1) No person who has clear cause to believe that a fish, fish product or other fisheries resources have been obtained in contravention of this Act shall buy, sell, possess or otherwise trade in such fish, fish products, or other fisheries resources.

Possession and trade in fish, fish product or other marine resources prohibited.

- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding three years or to both, and in addition all fish or fish products in respect of which the offence is committed shall be forfeited.
- 57. The Director-General may, in consultation with Fish Marketing Authority, for the purposes of promotion of fish production and marketing—

Promotion of fish production and marketing.

- (a) enter into arrangements and agreements with registered associations or institutions for the management development and administration of fisheries, and
- (b) facilitate the establishment of fish market management units and aquaculture production units.

PART VII-FISH QUALITY AND SAFETY

58. (1) The Ministry responsible for the Service shall be the competent authority responsible for the official control of the safety of fish, fish products and fish feed.

Competent authority.

- (2) The Cabinet Secretary shall establish a technical committee on Fish Quality and Safety.
 - (3) The functions of the Committee shall be to—
 - (a) monitor the production of fish products and fish feed with a view to assessing risks to humans;
 - (b) regulate fish handling, landing, transportation, processing and marketing;

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- (c) work in collaboration with other Government agencies in matters related to this section;
- (d) carry out inspection of operational fishery enterprises for compliance with fish safety regulations issued by the Cabinet Secretary;
- (e) lay down all procedures to be followed for compliance with provisions under paragraph (f);
- (f) specify conditions for the placing on the market of fish, fish products and fish feed;
- (g) maintain a register of fishery enterprises approved by the competent authority.
- (h) issue health certification of fish, fish products and fish feed subject to the consignment meeting set requirements;
- (i)perform such other functions as may be necessary or expedient for food safety conditions of fish products in accordance with this Act.
- (4) The Cabinet Secretary may for the purposes of subsection (2) make regulations, and such regulations shall regard to conduct of the affairs of the standing committee.
- 59. The Director-General may, pursuant to the Treaty Making and Ratification Act, 2013 in consultation with the Cabinet Secretary enter into arrangements or agreements with other States within shared fishery resources for the purpose of harmonization of fish safety and quality standards.

Harmonization of fish safety and quality standards.

60. (1) Any person who sells or exports fish or fish products intended for human consumption shall comply with all applicable food quality, health and sanitation requirements and shall not sell or export such fish or fish products which—

Sale, export of adulterated or contaminated fish, or fish products prohibited.

- (a) are adulterated;
- (b) are contaminated with or contains a poisonous or harmful substance or pathogenic micro-organisms;
- (c) have not met applicable inspection standards; or
- (d) are otherwise injurious to human health.
- (2) A person who knowingly and wilfully contravenes sub-section (1) commits an offence and shall be liable on

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conviction to a fine not exceeding one million shillings or to an imprisonment for a term not exceeding ten years or to both, and in addition any fish or fish products involved in the transaction and those owned or controlled by such person shall be forfeited.

PART VIII—AQUACULTURE

- **61.** (1) No person shall engage in commercial aquaculture activities except in accordance with this Act.
- Aquaculture activities requirements.
- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding three hundred thousand shillings or to a term of imprisonment not exceeding five years or to both.
- 62. (1) The Director-General shall, in consultation with the Oceans and Fisheries Advisory Council, prepare an aquaculture development plan for the review and endorsement by the Board and approval by the Cabinet Secretary, with the objective of promoting the sustainable development of aquaculture in Kenya in accordance with the principles and objectives of this Act.
- (2) Any aquaculture development plan developed under subsection (1) shall be for duration of three years.
 - (3) The aquaculture development plan shall include—
 - (a) a statement of the objectives and priorities of the plan and a strategy for achieving those objectives;
 - (b) performance indicators to monitor the extent to which the objectives of the plan are being attained;
 - (c) a strategy for monitoring progress at least on an annual basis, and as appropriate an evaluation of the implementation of the aquaculture plan that preceded it;
 - (d) a description or identification of any area of water which is suitable for aquaculture and the type of aquaculture for which the area is suitable;
 - (e) a description of suitable methods for undertaking any type of aquaculture;
 - (f) identification of suitable or unsuitable species of fish for aquaculture;
 - (g) requirements or standards for water quality, aquaculture waste, escapement, environmental

Aquaculture development plan.

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- impact assessments and the introduction, transfer and release of fish for purposes related to aquaculture; and
- (h) any other matter concerning aquaculture which the Board or Director-General considers appropriate.
- (4) The first aquaculture development plan shall be prepared and submitted through the Board to the Cabinet Secretary for approval as soon as reasonably practicable and in any case within one year from the date on which this Act enters into force.
- 63. The Director-General shall, in collaboration with County authorities and relevant bodies, ensure that—

Collaboration with Counties.

- (a) aquaculture development is ecologically sustainable and allows rational use of the resource shared by aquaculture and other activities; and
- (b) the livelihood, culture and traditions of local communities and their access to fishing grounds are not affected by aquaculture development.
- **64.** (1) No person shall, by carrying out aquaculture activities, deprive a local community of its traditional access to fishing grounds without good cause and without first consulting the affected community.

Prohibited to deprive community of traditional access to fisheries.

- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding three hundred thousand shillings or to a term of imprisonment not exceeding three years or to both, and in addition shall restore to the local community its traditional access.
- 65. (1) County governments shall monitor aquaculture and mariculture practices and operations in areas under their respective jurisdictions pursuant to this Act.
- (2) Where any person or any County government has cause to believe that any fish and fish products from any waters used for aquaculture activities are infected with a disease which can reasonably be foreseen to become, or which has become, of epidemic proportions, such County government shall in consultation with the Cabinet Secretary, give notice in writing to the owner of the relevant waters requiring the destruction of all fish and fish products in the said waters or the taking of such other

County's responsibility to monitor non-commercial aquaculture

measures as the county government may specify in the notice.

- (3) Every person who receives a notice under subsection (2) shall comply with its requirements at her own expense, and in default of such compliance, the local fisheries authority may enter the relevant facility and take or cause to be taken such measures as may be necessary for complying with the requirements of the notice and any expenses incurred shall be recoverable as a civil debt from the person so notified.
- (4) A person who does not comply with the requirements in the notice received pursuant to subsection (2) commits an offence and shall be liable on conviction not exceeding three hundred thousand shillings or to a term of imprisonment not exceeding three years or to both, and in addition shall be responsible for costs directly associated with the resulting damage.
- (5) Where an officer wilfully, negligently or without justifiable cause issues a notice under sub-section (2), the officer shall be held personally liable for any resultant loss.
- **66.** (1) No person shall, without written permission granted by the Director-General on the advice of the Board—

Permission of Director-General and approval by Board required.

- (a) introduce or cause to be introduced into Kenya or the Kenya fishery waters any exotic species of fish or any genetically modified fish;
- (b) transfer any eggs, fingerlings or seed of exotic or genetically modified species or such adult species of fish from one aquaculture establishment in Kenya to another or from any location in Kenya to another;
- (c) import or export live fish for the purpose of aquaculture; or
- (d) release into the fishery waters any fish except for indigenous wild fish caught in Kenya.
- (2) Permission for any activity in subsection (1) may be granted subject to such conditions as the Director-General, with the written approval of the Board, considers appropriate and after an environmental impact assessment has been undertaken.

(3) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding one million shillings or to a term of imprisonment not exceeding five years or to both.

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67. (1) The Director-General may inspect or cause to be inspected any fish before or after they are imported for the purpose of aquaculture and inspect or cause to be inspected any fish produced by aquaculture operations that are destined for export.

Director-General's authority to inspect, seize fish destined for import or expert or diseased, highly invasive fish.

(2) The Director-General may seize, hold, quarantine, disinfect or destroy any live fish that have been imported or that are destined for import or export for purposes of aquaculture, and shall take such measures where it is determined that the species are diseased or highly invasive.

Aquaculture waste.

- 68. (1) Each person engaged in commercial aquaculture in Kenya shall ensure that aquaculture waste—
 - (a) does not cause an unsightly or offensive condition at the licence area; and
 - (b) is secured or treated in a manner designed to prevent it from being blown, washed or swept off the licence area.
- (2) Where any person fails or apparently fails to fulfil the conditions set out in subsection (1), the Director-General, in consultation with the National Environmental Management Authority, may notify such person in writing of the requirement to take measures to restore the applicable area to such standard as the Director-General may specify within a stated period of time, and may upon inspection require such person to redesign the applicable area.
- (3) Each person who is notified by the Director-General pursuant to subsection (2) shall promptly fulfil the requirements set out in the notification.
- (4) A person who contravenes subsection (1) or (3) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding five years or to both, and in addition shall be responsible for compensation for the costs of restoring the applicable area as required pursuant to subsection (2).

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Escapement.

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- 69. (1) Each person engaged in commercial aquaculture in Kenya shall take appropriate measures to prevent or minimise the risk of the escape of aquaculture stock into the wild.
- (2) Where there has been an escape of hatchery reared aquaculture stock or damage to a farming structure, equipment or facility that may lead to the escape of hatchery reared aquaculture stock, the operator of the relevant aquaculture establishment shall take immediate measures to minimise the damage and to repair any damage caused to the extent possible.
- (3) Each person engaged in commercial aquaculture in Kenya shall, within twelve hours after becoming aware of the escape of hatchery reared aquaculture stock or damage to a farming structure in relation to a facility over which the person exercises management or control or to other equipment, that may lead to the escape of hatchery reared aquaculture stock, notify the Director-General of the escape or damage, including the following—
 - (a) the species of fish affected;
 - (b) the date (or an estimate of the date) on which the escape or damage took place;
 - (c) the number and biomass (or an estimate of the number and biomass) of the fish that have escaped; and
 - (d) the age or developmental stage of the fish at the time of their escape and details of the circumstances in which the escape or damage took place,

and, within seven days after becoming aware of such escape or damage, notify the Director-General in writing of the action taken to deal with it.

- (4) A person who contravenes subsection (1), (2) or (3) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding five years or to both.
- 70. (1) No person shall use in a commercial aquaculture establishment any drug, pharmaceutical, antibiotic or other chemical for the treatment of fish diseases or for the enhancement of fish growth without the

Use of drug, chemical, etc. restricted. written approval of the Director-General.

- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding five years or to both.
- 71. The Director-General shall have the authority to collect information and data on wild and genetically modified species for the purpose of assessing their impact on aquaculture.

Information on wild, genetically modified species.

72. (1) No person shall, without a valid and applicable aquaculture license—

Interfering with aquaculture establishment prohibited.

- (a) interfere with or harvest the product of an aquaculture establishment without the written authority of the licensee;
- (b) place any object in the water, or promote or undertake any activity in a manner so as to obstruct an aquaculture operation being carried out by another person;
- (c) destroy, damage, displace or alter the position of any equipment lawfully deployed in connection with an aquaculture licence; or
- (d) without lawful excuse cause the release of any product of an aquaculture establishment.
- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding two hundred thousand shillings or to a term of imprisonment not exceeding five years or to both, and in addition shall fully compensate the relevant licensee for any damage which is the direct result of his/her contravention.
- 73. Subject to applicable regional and international law, the Director-General shall initiate dialogue with other riparian States to ensure that governments and aquaculture farmers are obliged to protect transboundary aquatic ecosystems from—
- Transboundary aquaculture ecosystems.
- (a) escapement of aquaculture species into shared water bodies;
- (b) waste from aquaculture activities;
- (c) diseases that are likely to become or have reached epidemic proportions; and

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 - (d) effluent that might affect transboundary aquatic ecosystems.
- **74.** (1) The Cabinet Secretary may make Regulations for the better carrying out of the provisions of this Act.

Regulations for Aquaculture.

- (2) Without prejudice to the generality of the provisions of subsection (1), the Regulations shall include—
 - (a) fish hatchery standards;
 - (b) qualifications of persons authorized to offer aquaculture extension services;
 - (c) the mode of establishment of fish cages or any such form of aquaculture establishment in Kenya fishery waters;
 - (d) aquaculture extension systems;
 - (e) fish disease surveillance, control and management in aquaculture establishments;
 - (f) the use of biotechnology to increase productivity;
 - (g) codes of practice for fish farmers; or
 - (h) any other measure that he deems necessary for the proper management of aquaculture.

PART IX —INFORMATION, DATA AND RECORDS

75. (1) The Director-General may, for purposes of this Act, require any person to keep and furnish in such manner and form and at such time as the Director may specify—

ation ling,

Information, data

and records.

- (a) any information and data, including information relating to fishing, fisheries, aquaculture, landing, research, storage, food safety, processing, buying, selling, exports and other related transactions;
- (b) accounts, records, returns, documents; and
- (c) any other information in relation to activities falling within the scope of this Act additional to that specified under this Act.
- (2) The following categories of persons shall keep such accounts, records, documents, and furnish such returns, data and other information, in accordance with the requirements under this Act—

(a) holders of licences or authorizations issued under this Act;

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- (b) owners, operators, legal representatives, and masters of vessels licensed or authorized under this Act:
- (c) owners and persons in charge of any premises where fish or fish products are received, bought, stored, transported, processed, sold, or otherwise disposed of;
- (d) persons who engage in the receiving, buying, selling, transporting, processing, storage, export, import or disposal of fish or fish products;
- (e) persons who engage in commercial aquaculture activities:
- (f) persons engaged in recreational fishing;
- (g) persons engaged in fishing otherwise than for the purpose of sale of the fish caught, including research; and
- (h) such other persons who may be required to do so by the Director-General pursuant to this Act.
- (3) The Director-General may, for purposes of verification of accounts, records, documents, returns, or information required to be kept, furnished or communicated in any manner or form under subsection (1) or (2)—
 - (a) audit or inspect any accounts, records, returns or other information or place where such information may be kept;
 - (b) audit or inspect any vessel, processing plant aquaculture establishment or other facility operating under the scope of this Act; and
 - (c) require from any person further information, clarification or explanation regarding any accounts, returns or information kept, furnished or communicated under this section in accordance with such time limits as may be specified or prescribed.
 - (4) A person who—

- (a) is required pursuant to subsections (1), (2) or (3) to keep, furnish, provide or communicate any accounts, records, returns or other data or information and does not do so as lawfully requested or required; or
- (b) does not facilitate, assist or comply with the requirements for an audit or inspection undertaken pursuant to subsection (3),

commits an offence and shall be liable on conviction to a fine of three hundred thousand shillings or to a term of imprisonment not exceeding five years or to both, and any licence issued pursuant to this Act which is held by such person shall be revoked.

- 76. Ownership of all information required to be reported, notified or otherwise given to the Government and all information generated by automatic location communicators or similar device that is part of a vessel monitoring system under this Act is vested in the Government.
- 77. (1) True copies of all agreements setting out the terms of partnership, association or other contractual obligations of agents to vessel owners shall be deposited in their full and unabridged form with the Ministry upon the application in respect of a foreign fishing vessel for any licence or authorization under this Act.
- (2) In cases where an agreement contains information of a significantly sensitive commercial nature, such information may be concealed provided that it is declared, certified and legally notarised as such.
- (3) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine of one million thousand shillings or to a term of imprisonment not exceeding three years or to both.
- (4) Any person who, not being party to the partnership, association or other contractual obligation referred to in subsection (1), divulges information of a confidential nature or conceals information which is not of a significantly sensitive commercial nature, commits an offence and shall be liable on conviction to a fine of three hundred thousand shillings or to a term of imprisonment not exceeding five years or to both.

Ownership of information.

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Information in partnership agreements between vessel agents and vessel owners.

- 78. (1) The labels of any container or packaging materials containing fish harvested in the Kenya fishery waters shall clearly indicate—
- Information on labels of containers, etc. containing fish harvested in Kenya fishery waters.
- (a) that the fish were harvested in the Kenya fishery waters, irrespective of the flag State of the vessel or nationality of any person involved in the production of such fish, and shall not indicate in any way that such fish is the product of any State other than Kenya;
- (b) the name of the fishing vessel that harvested the fish;
- (c) the name of the company that is the owner or operator of the fishing vessel; and
- (d) such other information that may be prescribed.
- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine of three hundred thousand shillings or to a term of imprisonment not exceeding three years or to both.
- **79.**(1) Any information given, furnished or maintained or required to be given, furnished or maintained under this Act shall be true, complete and accurate.

Information to be true, complete and correct.

- (2) A person who keeps, furnishes or communicates any accounts, records, returns or information by or under this Act, and gives, furnishes, or maintains information which is false, misleading or inaccurate in contravention of subsection (1) in any material respect, commits an offence and shall be liable on conviction to a fine of three hundred and fifty thousand shillings or to a term of imprisonment not exceeding three years or to both, and any relevant licence issued pursuant to this Act which is held by such person may be revoked.
- 80. (1) No person carrying out duties or responsibilities under this Act, including the Cabinet Secretary, Board members and Director-General shall, unless authorized or otherwise provided or directed in accordance with this Act, reveal information or other data of a confidential nature or designated as confidential in accordance with this Act, acquired by virtue of their said authority, duties and responsibilities to any person not having such authority or carrying out such duties and responsibilities.

Confidential

- (2) The Cabinet Secretary in consultation with the Director-General may designate any information as confidential, and in doing so may also exempt general summaries of aggregated information from confidentiality requirements.
- (3) The Director-General may authorise in writing any person to—
 - (a) receive or access confidential information;
 - (b) access or restrict access to such premises holding confidential information as he/she may designate.
- (4) Notwithstanding subsection (2), the following information shall be confidential unless the Cabinet Secretary in consultation with the Director-General otherwise directs—
 - (a) any information or data of a commercial nature provided in records, returns, or other documents required under this Act;
 - (b) any information or data supplied by a vessel monitoring system or part thereof in accordance with this Act;
 - (c) such raw data from scientific research as may be designated by the Cabinet Secretary in consultation with the Director-General; and
 - (d) such other information or data as may be required by the Cabinet Secretary in consultation with the Director-General.
 - (5) Information may be disclosed to the extent—
 - (a) that disclosure is authorized or required under this Act or any other law;
 - (b) that the person providing the information authorized its disclosure;
 - (c) necessary to enable the Director-General to publish statistical information relating to the fisheries sector;
 - (d) necessary for enforcement of Kenya laws by other Ministries and agencies of the Government of Kenya;

- (e) necessary to discharge regional or international obligations or to promote regional and international cooperation or coordination in monitoring, control and surveillance of relevant activities; and
- (f) necessary to enable advice to be given to the Cabinet Secretary.
- (6) The Cabinet Secretary in consultation with the Director-General may authorise the release of any information—
 - (a) relating to the real-time or other position of any vessel, upon request, to the responsible authority for purposes including surveillance, search and rescue and other emergency;
 - (b) for purposes he or she deems would be supportive of the objectives and enforcement of this Act, including reasonable transparency in decisionmaking; or
 - (c) designated as confidential for such purposes as the Cabinet Secretary may approve or as may be prescribed.
- (7) Any information designated as confidential shall maintain such classification for a period of five years from the time of such designation, and at the expiry of five years, the Cabinet Secretary in consultation with the Director-General may extend such classification for a further period of up to five years or more as they may deem necessary for purposes relating to the objectives and enforcement of this Act.
- (8) A person who does not comply with the requirements of subsection (1), except where disclosure is authorized pursuant to subsection (3), (5) or (6) commits an offence and shall be liable on conviction to a fine of one million shillings.
- **81.** (1) The Director-General shall establish and maintain a national register of licences and authorizations issued under this Act in accordance with such requirements as may be prescribed or required by the Minister.
- (2) The register established under subsection (1) shall include —

Registers of licences and authorizations.

- (a) information on applications for licences and authorizations under this Act;
- (b) information on each licence and authorization issued, renewed, suspended or cancelled under this Act, including the activity, date and duration;
- (c) information on each licensed or authorized person;
- (d) information on the relevant vessel, facility, and/or licensed or authorized activity;
- (e) any record of non-compliance with the licence or authorization:
- (f) any record of action taken as a result of non-compliance;
- (g) the requirements of any relevant international conservation and management measures of an organization of which Kenya is a member or cooperating non-member; and
- (h) such other information that may be prescribed or required by the Director-General.
- (3) The register established under subsection (1) shall contain information relating to fishing vessels licensed or authorized for fishing or fishing related activities—
 - (a) within areas under national jurisdiction; and
 - (b) in areas beyond national jurisdiction.
- (4) The Director-General shall, in respect of information contained in the register in accordance with subsection (2), provide access to such information on request by directly interested Government bodies, regional fishery bodies including regional fisheries management organizations, international organizations and foreign States or entities, taking into account any applicable laws regarding the confidentiality or release of such information.
- (5) The Director-General shall ensure that the information on each license and authorization in the database is sufficient for purposes of fisheries management and monitoring, control and surveillance, and to implement the international and regional agreements to which Kenya is party or cooperating non-party.

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- (6) The Director-General shall ensure that, where appropriate, information is released from the database and communicated to other States and regional and international organizations in a timely manner to ensure the discharge of the regional and international obligations of Kenya including as a flag State and as a member of regional fisheries management organizations.
- (7) Registration of a licence or authorization in the national register shall not be considered a licence or authorization for the purposes of this Act.
- (8) A person may, upon payment of such fee as may be prescribed, access any non-confidential information from the register.
- 82. The Director-General shall maintain and make publicly available a record of the outcome of any legal or administrative action taken in respect of any violation against this Act that results in a judgment or administrative determination.

Information on legal and administrative action taken in respect of violations of the Act.

83. The Director-General shall make information available to the public and as necessary disseminate relevant information to stakeholders for purposes of fisheries conservation, management and development, including regional and international organizations, except for such information that may be designated confidential in accordance with section 82.

Information available to public.

PART X— LICENSING AND REGISTRATION

Licences, authorizations and registration

84. (1) A valid and applicable licence issued in accordance with section 92(3) shall be required for—

Licences and authorizations required.

- (a) using an industrial fishing vessel for fishing or fishing related activities in the Kenya fishery waters;
- (b) using a semi-industrial fishing vessel for fishing or related activities in the Kenya fishery waters;
- (c) using an artisanal fishing vessel for commercial purposes;
- (d) commercial aquaculture; and
- (e) such other activity or activities within the scope of this Act for which a licence or authorization may

be required by the management measures in an applicable Fisheries Management Plan adopted in accordance with the requirements in this Act, or as may be prescribed from time to time.

- (2) The respective county governments shall be responsible for issuing licenses with respect to—
 - (a) using any vessel for recreational fishing in the Kenya fishery waters; and
 - (b) operating a fish processing establishment within the respective county.
- (3) The Cabinet Secretary shall prescribe the standards for the registration of vessels and grant, renewal and revocation of licences by a county government under subsection (2).
- (4) Each County Government may enact county specific legislation setting out the
 - (a) criteria for the registration of a vessel and issuance of a licence to an applicant for a licence under subsection (2);
 - (b) information required to be submitted by an applicant for registration or issuance of a licence;
 - (c) process of determination of an application;
 - (d) conditions for the issuance or renewal of a licence under this Act;
 - (e) grounds for the rejection of an application or cancellation of a licence issued under this Act;
 - (f) process of application for the renewal of licences, de-registration of a vessel and revocation of a licence issued to an applicant by the county government; and
 - (g) appointment of inspectors or such other authorised officers to carry out such inspections as the county executive committee member responsible for fisheries may consider necessary for the implementation of this Act.
 - (5) A valid and applicable written authorization issued in accordance with section 88 and 89 shall be required for—

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- (a) using a Kenyan fishing vessel in areas outside the Kenyan fishery waters;
- (b) each transhipment, including the transfer of fish from a fishing vessel to a carrier vessel or a shore based facility for the purpose of export;
- (c) using any vessel for marine scientific research or test fishing;
- (d) using any foreign fishing vessel to enter a port in Kenya; and
- (e) deployment and maintenance of any fish aggregating device in the Kenya fishery waters.
- 85. (1) Any person fishing only for purposes of non-commercial subsistence, intended to result in consumption of the fish caught, shall be exempt from the requirement for a licence but shall require to apply to the respective county government for registration.

Subsistence exemption from licence requirements.

- (2) The Cabinet Secretary may by order published in the Gazette determine the quantity of fish which may be deemed to be fish for own consumption under subsection (1), and different quantities may be determined for different areas of Kenya.
- (3) Subsection (1) shall not apply to a person employed by a licensee, or, subject to section 23 of the Penal Code, to a company which is a licensee, in respect of any act done by the person or company as such licensee.
- **86.** (1) The Board, on the recommendation of the Director-General may approve the grant or renewal of licences or authorizations for any purpose specified in section 87 after all inspections, verifications and other prelicensing requirements under this Act have been discharged and each licence or authorization shall be issued or renewed upon the written endorsement of the Cabinet Secretary.
- (2) A licence or authorization shall not have legal force or effect unless it has been approved and endorsed as required in subsection (1).
- (3) The Director-General shall, in approving or renewing a licence under subsection (1), act in accordance with the procedures required pursuant to this Act and such

Grant, renewal and issuance of licences and authorizations. other transparent and accountable standards as may be determined and published.

- (4) The Director-General shall promptly issue such licences or authorizations when all required conditions under this Act have been met and the Cabinet Secretary has endorsed such licence or authorization.
- (5) Where the Director-General declines to approve, issue or renew a licence or authorization, the Director-General shall state in writing reasons for the decision, and promptly transmit them to the applicant.
- 87. (1) In approving or renewing licences and authorizations pursuant to this Act, and in setting the level of any performance bond required pursuant to section 134, the Director-General shall take into account the extent to which the relevant fishing vessel, including its operator or other relevant person, as appropriate, has—
 - (a) the ability to comply with, or has complied with this Act, relevant laws of Kenya and any applicable licensing terms and conditions or Fisheries Management Plan and such other standards as may be required in writing by the Director-General:
 - (b) complied, and has the ability to further comply with other applicable regional and international obligations of Kenya;
 - (c) complied with all applicable vessel registration requirements;
 - (d) complied with all applicable requirements for pre-licensing inspections and related procedures, including as appropriate the full payment of costs for inspections;
 - (e) provided all required data and information;
 - (f) in the case of an operator or person, complied with applicable laws of other States and international conservation and management measures;
 - (g) where the applicant has been convicted of any offence under this Act or any other law relevant to the activity for which application was made, the requirements of the judgment have been fully met; and

Standards for approval, renewal and issuance of licences and authorizations.

- (h) complied with other relevant laws of Kenya including any applicable requirements of the Merchant Shipping Act,
- (2) In approving or renewing licences and authorizations in respect of any fishing vessel other than a Kenya fishing vessel pursuant to this Act, and in setting the level of any performance bond required pursuant to section 134, the Director-General shall take into account the ability of the relevant flag State to ensure compliance by its fishing vessels with the laws of Kenya.
- (3) An industrial or semi-industrial fishing licence shall not be issued or have legal force or effect unless the relevant vessel submits to inspection at the port of Mombasa or such other port as may be required by the Director-General, at the expense of such vessel, and it is established in writing by an inspector, or in the case of a port outside Kenya a person duly authorized by the relevant government agency to carry out the duties of an inspector, that all required licence conditions have been met, including that all gear on board is authorized pursuant to the licence.
- (4) A fish processing licence shall not be issued or have legal force or effect unless the county executive committee member responsible for fisheries in the respective county in consultation with the Director-General is satisfied that the fish processing establishment or any other operation complies with all such safety and sanitary standards as this Act, other laws of Kenya and conditions as the Cabinet Secretary by notice in the *Gazette* may require.
- **88.** (1) A licence or authorization shall not be approved, endorsed, issued or renewed where—

Requirements for denial of licences and authorizations.

- (a) a relevant vessel is not intended for use as a fishing vessel;
- (b) a relevant vessel does not hold a valid and applicable registration, or holds more than one registration;
- (c) a relevant vessel is not a Kenya vessel and does not have a valid and applicable authorization or licence from its flag State to fish in areas beyond national jurisdiction, including in Kenya fishery waters;

- (d) the issuance of a licence would be contrary to any applicable fisheries management plan or an aquaculture development plan;
- (e) the applicant for a commercial aquaculture licence has not undertaken an environmental impact assessment as required in respect of an aquaculture licence, or that such an assessment concludes that a licence should not be approved, endorsed, issued or renewed;
- (f) the species of fish that the applicant for a commercial aquaculture licence proposes to farm, the method of aquaculture that the applicant proposes to employ or the proposed site for aquaculture do not meet standards or requirements that may be prescribed or publicly notified for aquaculture;
- (g) within the previous six years, the applicant, or a vessel or person closely connected with the applicant in respect of activities falling within the scope of this Act, has been convicted of a serious offence pursuant to this Act or any international agreement and has not complied with a judgment or administrative determination unless, in respect of a vessel there has been a change of ownership of the vessel and there is no connection between the former owner(s) and the new owner(s), and the new owner(s) do not have a history of engaging in illegal, unreported or unregulated fishing;
- (h) the applicant, vessel, or associated person has been charged with an offence pursuant to this Act more than three times and has—
 - (i) not submitted to judicial or administrative procedures; or,
 - (ii) has submitted to judicial or administrative procedures but has not fully complied with the final decision or determination:
- (i) the issuance of the licence or authorization would be inconsistent with an international agreement to which Kenya is party;

- (j) the operator of the fishing vessel has not provided a performance bond if so required pursuant to section 134;
- (k) the activity is likely to threaten the sustainability of a fishery resource;
- (1) in the case of a foreign fishing vessel, an agent has not been appointed; or
- (m) the vessel in respect of which the licence is sought has been included on a list of illegal, unreported and unregulated fishing vessels established and maintained by a competent regional fishery body in accordance with its rules and procedures.
- (2) A licence or authorization shall not be approved, issued or renewed for any fishing vessel if that vessel was previously licensed or authorized by a foreign State for fishing within or in areas beyond national jurisdiction and was convicted of a violation under national law or undermined the effectiveness of international conservation and management measures, and, as a consequence—
 - (a) the foreign State suspended such licence or authorization because of illegal, unreported or unregulated fishing activities by the vessel, and the suspension has not expired; or
 - (b) the foreign State within the last three years preceding the application for a licence under this Act withdrew such licence or authorization for illegal, unreported or unregulated fishing activities.
- (3) The restriction in subsection (2) does not apply if the ownership of the vessel has changed since the vessel undermined international conservation and management measures, and the new owner has provided sufficient evidence to the Director-General demonstrating that the previous owner or operator has no further legal, beneficial or financial interest in the vessel.
- (4) For the purpose of subsection (1) (e) the term 'associated' shall include situations where the same legal or beneficial owner, or agent is shared.
- **89.** (1) Except where otherwise prescribed, an application for a licence or authorization under this Act shall—

Application for the grant or renewal of licences or authorizations.

- (a) contain such information as may be required in this Act or in writing by the Director-General or as may be prescribed;
- (b) be in such form as may be prescribed or such other form as may be approved by the Director-General;
- (c) in the case of industrial fishing vessels, be accompanied by an International Tonnage Certificate showing the gross tonnage issued under the International Tonnage Rules;
- (d) be accompanied by a fishing plan which shall specify for each month of the full period of validity of a licence or authorization, a fishing plan including the—
 - (i) fishing gear to be used;
- (ii) species to be targeted for fishing, and expected quantity;
- (iii) species that will constitute bycatch and expected quantity; and
- (iv) area in which fishing or fishing will take place; and
- (e) be made in accordance with such procedures and other requirements as may be approved by the Director General.
- (2) A non-refundable application fee as may be prescribed shall be payable and shall accompany every application for a licence or authorization required pursuant to this Act or the renewal of such licence or authorization.
 - (3) Where—
 - (a) the Director-General considers that an application has been made for an inappropriate class of licence;
 - (b) there is insufficient evidence or information accompanying the application upon which to make a recommendation regarding the application;
 - (c) the information accompanying the application appears to be false, misleading or inaccurate; or
 - (d) upon such other grounds as may be approved by the Board,

the Director-General shall return the application to the applicant with details of her/his reasons for returning the application, and the applicant may submit a revised application with such additional evidence or information as may be appropriate.

- (4) If the information on an application is found to be false, misleading or inaccurate the Director-General may decline to grant the licence or authorization, or if such information is discovered to be false, misleading or inaccurate after the grant of the licence or authorization, the Director-General may suspend or cancel the licence or authorization.
- **90.** (1) A licence or authorization granted under this Act—

Terms and conditions of licences and authorizations.

- (a) shall be subject to the terms and conditions, requirements and endorsements as are provided in this Act or as may be otherwise prescribed or required by the Director-General by Public Notice from time to time;
- (b) subject to subsection (2), shall enter into force on the date specified in it; and
- (c) unless sooner revoked or suspended in accordance with this Act, remains in force until the date on which it expires in accordance with the period approved by the Director-General from time to time for the class of licence or authorization to which it belongs.
- (2) No licence or authorization shall be issued unless-
- (a) the approved fee and other required charges have been paid at the required time; and
- (b) where applicable—
 - (i) a performance bond has been issued as required pursuant to section 134 and notified to the Director-General; and
 - (ii) any access fee or other charges or levies payable under any relevant access agreement or arrangement, right or licence have been paid.
- (3) The holder of a licence or authorization issued pursuant to this Act shall—

- (a) comply with this Act, the laws of Kenya, any applicable access agreement, fisheries management plan, and international conservation and management measures;
- (b) comply with all relevant provisions of national law relating to navigational standards and the safety of vessels at sea; standards relating to work conditions on board fishing vessels; and
- (c) not engage in fishing or fishing related activities, operate a fish processing establishment or engage in commercial aquaculture except as stated in the licence or authorization.
- (4) The holder of a licence or authorization in respect of a fishing vessel shall ensure that the licence or authorization, or a certified copy thereof is carried on board any relevant vessel at all times during the period of validity and the master shall upon request, produce it to an authorized officer or inspector or other person authorized under this Act to inspect it, provided that the Director-General may authorise a true copy of a licence to be temporarily carried in circumstances where it has not been reasonably practical for the original to be placed on board a vessel.
- (5) The holder of a licence or authorization issued pursuant to this Act, other than for a fishing vessel, shall display the licence or authorization or a certified copy thereof in the registered business office, and produce it upon request to an authorized officer or inspector or other person authorized under this Act to inspect it.
- (6) A person who contravenes subsection (3), (4) or (5) commits an offence and shall be liable on conviction to a fine not exceeding three hundred and fifty or to a term of imprisonment not exceeding three years or to both.
- 91. (1) Where commercial employment is foreseen in relation to the activity for which the licence or authorization is sought, it shall be a condition of the licence or authorization that citizens of Kenya possessing the necessary qualifications and experience shall be given preference for employment, and such employment shall be in accordance with the Employment Act, 2007.

Preference for employment of citizens of Kenya

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- (2) A licensee shall not—
- (a) import unskilled labour; or
- (b) in any case use child labour,

for the carrying out of any of its operations undertaken under the terms of the applicable licence or authorization.

- (3) Where the applicant for a licence or authorization is partly or wholly a foreign citizen or company, or where an applicable fisheries access agreement, arrangement, right, licence or authorization has been entered into pursuant to section 89 and 90, such applicant shall be required, to the extent possible and in such manner as the Director-General may in consultation with the Cabinet Secretary approve, to contribute to the training and employment of Kenya citizens taking into account the requirements of safety and the need to maintain acceptable standards of efficiency in the conduct of the operations.
- (4) A person who contravenes subsection (2) or who does not fulfil requirements made by the Director-General under subsection (3) commits an offence and shall be liable on conviction to a fine not exceeding three hundred thousand shillings.
- 92. A licence or authorization issued pursuant to this Period of validity of licences and Act shall, unless otherwise provided, be valid for a authorizations. maximum period of one year and may be renewable, subject to any fisheries management decision taken in accordance with this Act and the terms and conditions set out in the licence or authorization.

- 93. (1) A licence or authorization granted under this Fees, charges or levies. Act shall be subject to payment of—
 - (a) such licence fee prescribed for that class of licence as may be prescribed; and
 - (b) such other fees, charges or levies as are set out in this Act, or as may be prescribed or required by the Director General by public notice.
- (2) The Director-General may, as a component of the licence or authorization fee for any fishing vessels, charge for the costs relating to observers described in section 148 (b) of this Act, and shall deposit such component into a designated account in the Fund established in section 27

and use such component solely for the purposes of the observer programme set out in section 147 and to pay the observer costs identified in section 152.

- (3) The Director-General may charge licence holders for the costs of services, including inspection services, in accordance with such policy and at such levels as the Cabinet Secretary may establish by Public Notice.
- (4) Unless otherwise prescribed or required, the amounts payable pursuant to subsections (1), (2) and (3) shall be paid as a condition of the issuance of a licence and no licence shall be issued unless they have been paid in full.
- 94. (1) The Director-General may, by written notice to Suspension or cancellation of licence the holder of a licence or authorization or that person's or authorization. agent, suspend or cancel any licence or authorization issued pursuant to this Act for any of the following reasons—

or authorization was given, and—

- (a) there has been a contravention of the licence or authorization, this Act, an applicable international agreement or international conservation and management measures or relevant applicable law of a third country in respect of which the licence
 - (i) any applicable law or international agreement providing for such suspension or cancellation;
 - (ii) the relevant person or persons involved in such contravention has or have not submitted to the legal or administrative process, or complied with the requirements of an applicable fine, penalty or other determination; or
 - (iii) the Director-General, having regard to the nature and seriousness of the contravention, considers it appropriate to suspend or cancel the licence or authorization;
- (b) there has been a failure to maintain or comply with, or there has been any material change or change in circumstances affecting the eligibility criteria for the licence or authorization, in the—
 - (i) registration of a company or a vessel;
 - (ii) ownership or beneficial ownership or control of a company or vessel since the time of licence approval; or

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- (iii) characteristics, identification markings, or gear of any licensed industrial fishing vessel;
- (c) the licence or authorization holder has furnished information which is untrue, incomplete or misleading in connection with the licence application;
- (d) where a licence or authorization may be transferred, this has been done without the written approval of the Director-General and endorsement by the Cabinet Secretary;
- (e) any fees, charges or levies required to be paid after the issuance of the licence or authorization have not been paid as required;
- (f) it is necessary to do so to implement conservation and management measures under this Act, in accordance with its objective and principles;
- (g) in the case of a commercial aquaculture licence, the licence holder fails to establish the aquaculture operation within the time specified by the Director-General; or
- (h) such other reasons as may be prescribed or provided in relevant laws of Kenya.
- (2) The Director-General shall suspend or cancel a licence or authorization in accordance with such procedures as may be prescribed, where—
 - (a) this Act, a fisheries management plan, aquaculture development plan or any international agreement so requires; and
 - (b) such suspension or cancellation is endorsed by the Cabinet Secretary.
- (3) Where a licence or authorization has been suspended or cancelled in accordance with subsection (2), the Director-General shall notify the applicant of the reasons.
- (4) There shall be no refund of fees paid in respect of a licence or authorization suspended or cancelled under this Act.
- (5) No person shall engage in any activity for which the relevant licence or authorization was issued after a

notice of suspension or cancellation given pursuant to subsection (3) has been received by the holder.

- (6) A person who contravenes subsection (5) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding five years or to both.
- **95.** (1) A licence or authorization issued pursuant to Termination of licences and authorizations. this Act shall automatically terminate-
 - (a) upon the expiration of the period for which it was valid:
 - (b) where a vessel changes the country of registration, becomes registered in more than one country or is de-registered; or
 - (c) where the master, owner or charterer of the fishing vessel to which the licence or authorization relates is convicted of an offence under this Act and a decision to terminate the licence or authorization has been taken by the relevant judicial or administrative proceedings.
- (2) There shall be no refund for a licence or authorization terminated pursuant to this Act.
- (3) No person shall engage in any activity for which the relevant licence or authorization was issued after it has automatically terminated in accordance with conditions specified under subsection (1) (a), (b) or (c).
- (4) A person who contravenes subsection (3) commits an offence and shall be liable on conviction to a fine to a fine not exceeding one million shillings or to a term of imprisonment not exceeding five years or to both.
- **96.** (1) Any licence or authorization issued pursuant to Transfer of licences and this Act shall be—
 - (a) issued to a specific fishing vessel or activity; and
 - (b) personal to the holder of that licence.
- (2) Notwithstanding subsection (1), a licence issued to an industrial fishing vessel may be transferred to another industrial fishing vessel with the same characteristics and under the same agency with written authorization by the Director-General and endorsement by the Cabinet Secretary.

97. An applicant for a licence who is aggrieved by a Right of appeal. decision not to grant or renew any licence or authorization under this Act, or to a person who holds a licence or authorization who is aggrieved by a decision to suspend or cancel such licence or authorization may appeal to the Board within thirty days of receiving notification of such decision, and may further appeal to the Cabinet Secretary within thirty days of receiving notification of the Board's decision.

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Fishing, transhipment and fish aggregating devices

98. (1) Fishing licences issued for industrial or semi- conditions for fishing for industrial or semiindustrial fishing vessels for fishing or fishing related industrial fishing activities shall include the following conditions—

- (a) the fishing vessel shall clearly display at all times such markings as may be prescribed and shall not change such markings without written permission from the Director-General;
- (b) the fishing vessel shall at all times fly the flag of the State of which it is national;
- (c) the operator shall hold a valid registration in respect of the fishing vessel as may be required by the flag State or entity for that type of vessel and issued by such flag State or entity:
- (d) the operator shall hold only one valid registration in respect of the fishing vessel and shall not at the same time hold more than one such registration;
- (e) the operator shall comply at all times with such requirements for trawling gear as may be prescribed;
- (f) the operator shall not carry on board the fishing vessel any fishing gear that has not been approved for fishing activities pursuant to the fishing licence or authorization:
- (g) the operator shall not carry firearms aboard unless authorized by the Director-General;
- (h) unless otherwise authorized by the Director-General, the operator shall ensure that at least forty five percent of the crew members on board each fishing vessel are citizens of Kenya;

- (i) the operator shall comply with all relevant provisions of national law relating to navigational standards, standards relating to work conditions on board fishing vessels and the safety of vessels at sea:
- (i) the operator shall comply with any direction given by the Director-General for inspection of the vessel prior to departing from the Kenya fishery waters: and
- (k) such other conditions that are required pursuant to this Act, or that may be required by Public Notice by the Cabinet Secretary by notice in the Gazette or as may be prescribed.
- (2) A person who contravenes any condition in subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding fifty million shillings or to a term of imprisonment not exceeding five years or to both.
- 99. (1) In addition to the conditions specified in Conditions for industrial fishing vessels. section 90, licences issued to industrial fishing vessels for fishing or fishing related activities shall be subject to the following conditions—

- (a) the operator shall maintain fishing navigational logbooks at all times in the English language with such information and in the format as may be prescribed or required by the Cabinet Secretary;
- (b) the operator shall install, maintain and operate, in accordance with the requirements of this Act, an automatic location communicator or such other equipment integral to a vessel monitoring system as the Cabinet Secretary may require;
- (c) the operator shall carry on board an observer designated by the Director-General and comply with all requirements relating to observers set out in this Act:
- (d) the operator shall report in writing the vessel's position, catch and such other information that may be required by the Director-General to the Kenya Fisheries Service every twenty-four hours while in the Kenya fishery waters;

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- (e) the operator shall continually monitor the international distress and call frequency and the international safety and calling frequency;
- (f) the operator shall ensure that a recent and up-todate copy of the International Code of Signals be carried on board and accessible at all times;
- (g) the operator shall ensure that a recent and up-todate set of charts showing the Kenya fishery waters is carried on board at all times;
- (h) the operator shall not at any time, except for purposes of steaming directly into port with all gear stowed, cause or allow the fishing vessel to enter, be present in, engage in fishing for or take or carry on board or possess fish taken from the territorial sea or other area closed to fishing;
- (i) the operator shall not at any time cause or allow the fishing vessel to engage in fishing for or take or carry on board or possess fish taken from a closed area or from any marine protected area declared pursuant to this Act where such fish are protected;
- (j) the operator shall retain no more than thirty percent of the bycatch, or such other amount as maybe prescribed and the remaining portion of the bycatch shall be landed as required pursuant to subparagraph (k);
- (k) except where transhipment has been authorized, all catch, or a designated portion, shall be landed for sale in the local market at such places as may be designated in the licence or directed in writing by the Director-General, and unless otherwise prescribed shall include the following landing obligations for each designated class of vessel in respect of the total fish catch taken from Kenya's Economic Exclusive Zone on a yearly basis—

(i) purse seiners:

30%

(ii) long liners

30%

(iii) shrimp trawlers:

70% of the bycatch

5% of the shrimp

- (l) no person shall use a Kenya fishing vessel, being an industrial fishing vessel, except with a valid and applicable authorization issued pursuant to an application made in accordance with such form as may be prescribed, for fishing or fishing related activities—
 - (i) on the high seas;

- (ii) in areas under the national jurisdiction of any other State except in accordance with the laws of that State; or
- (iii) that do not comply with an applicable international agreement or undermine the effectiveness of international conservation and management measures;
- (m) no person shall use a Kenya fishing vessel, being an industrial fishing vessel, during the period of validity of the licence-
 - (i) for fishing or fishing related activities on the high seas for fishing related activities in areas subject to international conservation and management measures unless the licence or authorization has been endorsed to authorise such fishing;
 - (ii) in areas of national jurisdiction of other States except in accordance with a licence or authorization and the laws of that State; or
 - (iii) to engage in any activity on the high seas or in areas of national jurisdiction of other States which does not comply with an applicable international agreement or undermines the effectiveness of international conservation and management measures in an area to which such measures apply;
- (n) unless the Director-General otherwise directs in writing or unless the master of the fishing vessel is able to communicate effectively in English, the operator shall ensure that the fishing vessel has on board at all times while in the Kenya fishery waters a person who is able to communicate

- effectively in English and in the language of the master: and
- (o) such other conditions that may be required by Public Notice by the Cabinet Secretary or prescribed in accordance with this Act.
- (2) A person who contravenes any condition in subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding fifty million shillings or to a term of imprisonment not exceeding five years or to hoth.
- 100. (1) In addition to the conditions described in Reporting requirements for industrial fishing sections 90 and 101, the operator of each industrial fishing vessels. vessel shall make such reports as may be prescribed or required by the Director-General as a condition of licence or authorization, which shall include—

- (a) maintaining a fishing log for each fishing trip in the area to which the relevant licence applies in the English language or other language approved by the Director-General, which shall include—
 - (i) the gear type used;
 - (ii) the noon position of the vessel and, where applicable, the set position of the fishing gear and soak time or the number of hooks and the sea surface temperature;
 - the total number of hauls per day, aggregate time for each haul and total number of days fished per fishing trip;
 - (iv)the species of fish taken and the size and quantity of each species by weight or number as may be specified in the relevant reporting form;
 - (v) the species of fish returned from the vessel to the sea, the reason for the discard, the quantity of each species by weight or number; and
 - (vi) such other information as may be prescribed or as the Director-General may require.
- (b) reporting information as may be prescribed or required approved by the Director-General relating to the position of, and the catch on board,

the vessel and such other information that may be required by this Act or the Director-General at the following times—

- (i) at least twenty four hours prior to the estimated time of entry into and departure from the Kenya fishery waters;
- (ii) each day while the vessel is in the Kenya fishery waters;
- (iii) at least twenty four hours prior to the estimated time of entry or departure from port; and
- (iv) upon entry into or departure from a closed area or marine protected area.
- (c) ensuring that any information or data which may be required to be transmitted by communication, a transponder, automatic location communicator or other component of a vessel monitoring system is transmitted continuously, accurately and effectively to the designated receiver:
 - (i) providing such daily information as and in the form the Cabinet Secretary may require to give effect to its duty under international agreements and law; and
 - (ii) certifying that all information provided pursuant to subparagraphs (a), (b), (c) and (d) is true, complete and correct.
- (2) A person who contravenes any condition in subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding one million shillings or to a term of imprisonment not exceeding five years or to both.
- 101. (1) In addition to the conditions described in Conditions for semi-industrial fishing section 98, licences issued to semi-industrial fishing vessels. vessels for fishing or related activities shall be subject to the following conditions—

- (a) no person shall use a semi-industrial fishing vessel during the period of validity of the licence-
 - (i) for fishing or fishing related activities in areas under the national jurisdiction of other States

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- unless the licence or authorization has been endorsed to authorise such fishing or fishing related activities; or
- (ii) in areas of national jurisdiction of any other State except in accordance with laws of that State:
- (b) every semi-industrial fishing vessel shall be marked with a registration number and such other identification markings as may be prescribed or required in writing by the Director-General.
- (c) on receipt of an application for registration of a semi-industrial fishing vessel made under this Act, the Director-General shall, as soon as practicable, cause the vessel to which the application refers to be inspected and if, upon such inspection, the vessel is found to be fit for fishing and meets the prescribed safety standards, the Director-General shall assign identification markings to the vessel and on payment by the applicant of the prescribed registration fee, issue to the owner of the vessel a certificate of registration.
- (d) except where transhipment has been authorized, all catch, or such portion as may be prescribed or required by the Cabinet Secretary, shall be landed for sale in the local market at such places as may be designated in the licence or directed in writing by the Cabinet Secretary, and shall include the following landing obligations for each designated class of vessel in respect of the total fish catch for each fishing trip, unless otherwise prescribed:
 - (i) undecked semi-industrial fishing

vessels:

100%; and

- (ii) decked semi-industrial fishing vessels: 50%.
- (e) no person using an undecked semi-industrial fishing vessel shall carry gear that exceeds such amount and dimensions as may be prescribed.
- (2) A person who contravenes any condition in subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding one million shillings or to a term of imprisonment not exceeding five years or to both.

- 102. (1) In addition to the conditions described in Reporting requirements for semi-industrial section 98 and 106 the operator of each semi-industrial fishing vessels. fishing vessel shall make such reports as may be prescribed or required by the Director-General, monthly or at such earlier time as may be required by the Director-General, as a condition of licence or authorization, which shall include—

- (a) maintaining a fishing log for each fishing trip in the area to which the relevant licence applies, in the English language or other language approved by the Director-General, which shall include—
 - (i) the date of fishing;
 - (ii) the gear type used;
 - (iii) the species of fish taken and the size and quantity of each species by weight or number as may be prescribed or the Director-General may require; and
 - (iv)the species of fish returned from the vessel to the sea, the reason for the discard, the quantity of each species by weight or number;
- (b) the place of landing or transhipment;
- (c) such other information as may be prescribed or as the Cabinet Secretary may require; and
- (d) certifying that information provided pursuant to sub-paragraphs (a), (b) and (c) is true, complete and correct.
- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding five million shillings or to a term of imprisonment not exceeding three years or to both.
- 103. (1) No person shall use an artisanal fishing vessel Registration of artisanal fishing vessels. for fishing in the Kenya fishery waters without—
 - (a) a valid and applicable registration number; and
 - (b) displaying such registration number in accordance with the requirements in such form as may be prescribed.
- (2) The owner of each artisanal fishing vessel shall apply for a registration number on such form as may be prescribed or as the Director-General may require.

- (3) Any person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding two hundred thousand shillings or to a term of imprisonment not exceeding one year or to both.
- 104. (1) Subject to subsection (2) and in addition to Registration of vessels. the provisions of section 124, no fishing vessel shall be operated in the Kenya fishery waters, and no Kenyan fishing vessel shall be used in or outside the Kenya fishery waters for fishing or fishing related activity, unless such fishing vessel has been registered by the Board in accordance with this section, notwithstanding that it holds a valid and applicable registration as may be required under any other law of Kenya.
- (2) The County executive committee member may, by notice in the Gazette, exempt any local fishing vessel used only for recreational fishing other than for reward or profit from the requirements of subsection (1).
- (3) An application for registration of a fishing vessel shall be made to the Director-General in the prescribed form.
- (4) On receipt of an application under subsection (3) the Director-General shall cause the vessel to be inspected and may thereafter register the vessel.
- (5) The Director-General shall maintain or cause to be maintained of Fishing Vessels Register in which shall be entered the following information in respect of the vessel—
 - (a) the name, street address, telephone number, fax number and email address of the owner and, where applicable, the previous owner;
 - (b) the name and any previous name of the vessel;
 - (c) the year and place of manufacture;
 - (d) the flag country and previous flag country if any;
 - (e) type of gear used;
 - (f) radio call sign;
 - (g) vessel tonnage;
 - (h) vessel length;

- (i) fish hold volume;
- (j) fish carrying capacity;
- (k) IMO number as applicable;
- (1) vessel identifier issued by an RFMO as applicable; and
- (m) national registration number.
- (6) The Director-General may subject to approval by the rd, where he is satisfied that a fishing vessel inspected er this section is fit for fishing and meets the prescribed ty and hygiene standards, issue a certificate of registration espect of that vessel upon payment of the prescribed fee by applicant.
- (7) In any judicial or administrative proceedings brought under this Act, the entry in respect of a vessel in the Register of Fishing Vessels, or any other register maintained by the Director-General under this section, shall be *prima face* evidence of the ownership of the vessel.
- (8) Where a fishing vessel is operated in contravention of subsection (1), the master, owner and charterer of the vessel each commit an offence and shall each be liable upon conviction to a fine not exceeding three hundred thousand shillings or imprisonment for a term not exceeding one year, or to both.
- (9) The requirements under this section are in addition to and not in derogation from any requirement for registration under any other law relating to vessels.
- 105. Unless otherwise provided, an application for a licence, authorization or registration under this Act shall be made in the prescribed form.

106. (1) Licences issued to recreational fishing vessels for fishing or fishing related activities shall be subject to the following conditions—

- (a) the vessel shall be duly registered in accordance with this Act, and the registration number shall be prominently displayed thereon in a manner and format prescribed by the Director-General.
- (b) on receipt of an application for registration of a recreational fishing vessel, the Director-General,

Applications for licences, etc.

Conditions for recreational fishing vessels.

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shall as soon as practicable, cause the vessel to which the application refers to be inspected, and if, upon such inspection, the vessel is found to be fit for fishing and meets the prescribed safety standards, the Director-General shall assign identification markings to the vessel and upon payment by the applicant of such registration fee as may be prescribed, issue to the owner of the vessel a certificate of registration; and

- (c) such other requirements as may be prescribed or required by the Director-General.
- (2) A person who contravenes any condition prescribed under subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding one hundred thousand shillings or to a term of imprisonment not exceeding one year or to both.
- 107. (1) The operator of any vessel in the Kenya Requirements for transhipment. fishery waters and Kenyan flagged vessel operating in the intending to take on board any fish by high seas transhipment or any other means, shall—

- (a) only tranship—
 - (i) at the port of Mombasa or such other port in Kenya that may be designated by the Director—General:
 - (ii) at the time and date authorized for transhipment; and
 - (iii) pursuant to a valid and applicable authorization issued pursuant to this Act and on such terms and conditions that may be required by the Cabinet Secretary; and
- (b) notify the Director-General of such intention not less than seventy-two hours prior to the intended transhipment.
- (2) Notification given under subsection (1) (b) shall include—
 - (a) the vessel's name, radio call sign and fishing licence number where applicable;
 - (b) full details of any catch on board the vessel;

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 - (c) the intended place, date and time of the transhipment;
 - (d) the intended species and quantity of fish to be transhipped; and
 - (e) the intended date and arrival time in Mombasa in order that supervisory arrangements can be made.
- (3) Not less than seventy-two hours prior to transhipment, the operator shall apply to the Director-General for a transhipment or loading authorization as the case may be in accordance with the conditions and in such form as may be prescribed and prior to the issuance of such authorization shall pay the required fee.
- (4) The transhipment or loading authorization shall specify when and where transhipment or loading shall take place and shall be subject to such conditions as the Cabinet Secretary may endorse.
 - (5) The operator of a fishing vessel shall-
 - (a) not tranship at sea under any circumstances unless authorized by the Director-General;
 - (b) only tranship at the time and port or other place authorized by the Director-General for transhipment;
 - (c) cause the fish being loaded to be accurately weighed and recorded by species on board the vessel, and furnish the Director-General with daily copies of these records; and
 - (d) during the transhipment operation give every assistance to any authorized officer, inspector or other person designated by the Ministry in the performance of official duties, including verification of the species and weight of the fish and determining when the transhipment operation has been completed.
- (6) During transhipment in the Kenya fishery waters the operator of each fishing vessel shall comply with all applicable laws of Kenya relating to protection of the marine environment.
- (7) Upon completion of the transhipment operation, the operator of each fishing vessel shall submit to the

Director-General within seventy-two hours of the transhipment or before departing the Kenya fishery waters, whichever is earlier, a full transhipment report on each transhipment completed in the Kenya fishery waters on such form as may be prescribed and such other form or information which may be prescribed or otherwise required by the Director-General.

- (8) A person who contravenes the provisions of this section commits an offence and shall be liable on conviction to a fine not exceeding fifty million shillings or to a term of imprisonment not exceeding five years or to both.
- 108. (1) No person shall deploy or maintain a fish Deployment and maintenance of a aggregating device in the Kenya fishery waters except with fish aggregating device. the authorization by the Director-General and in accordance with such conditions as the Director-General may specify or as are otherwise specified in this Act.

- (2) Conditions imposed under subsection (1) may include—
 - (a) the method of use of the fish aggregating device;
 - (b) its location;
 - (c) the times during which it may be used; and
 - (d) the markings or colourings to be adopted.
- (3) No fish aggregating device shall be placed in such a way as to hinder or block marine traffic or be a hazard to navigation at sea.
- (4) The authorization by the Director-General under this Act shall be in writing and may be in electronic form whether as a condition of licence or otherwise.
- (5) Unless otherwise provided under this Act or specified by the Director-General, authority to place a fish aggregating device shall not confer any exclusive right to fish in the vicinity of the device.
- (6) The master of any vessel placing a fish aggregating device shall notify the Director-General within twenty-four hours of such placement and of the nature and location of the device.
- (7) Any person who contravenes subsection (1), (3) or (6) commits an offence and shall be liable on conviction to

a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding one year or to both.

- 109. (1) The Director-General may, by notice published in the Gazette, declare any fish aggregating device to be a designated fish aggregating device for the purposes of this Act.
- (2) Subject to subsection (3), no person shall fish within a radius of one nautical mile from a designated fish aggregating device except with the permission of the Director-General and in accordance with such conditions as he/she may specify.
- (3) The Cabinet Secretary may, by Public Notice, declare that any class of persons who are Kenya nationals may fish within a specified radius of a designated fish aggregating device or a class of designated fish aggregating devices.
- (4) Any person who contravenes subsection (2) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding one year or to both.
- 110. (1) No person, being the operator of a fishing vessel or any other person in apparent control of a fish aggregating device shall deploy a fish aggregating device unless it—
 - (a) is clearly marked with the name of the owner and of the vessel from which such device was placed;
 and
 - (b) is equipped with a radar reflector and such lights as are clearly visible at night from a distance of one nautical mile,

and has such other equipment or markings as the Director-General may from time to time require.

- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding one hundred thousand shillings or to a term of imprisonment not exceeding one year or to both.
- 111. (1) No person shall use or dispose of a fish aggregating device in a manner other than in accordance with this Act or as may be required by the Cabinet Secretary.

Designated fish aggregating device.

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Markings, equipment for fish aggregating devices.

Disposal of unauthorized fish aggregating devices.

(2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding ten million shillings or to a term of imprisonment not exceeding one year or to both.

Fish processing and marketing

- 112. (1)Each licence to operate a fish processing establishment shall be subject to the following conditions in addition to any other conditions required pursuant to this Act—
- Conditions for fish processing licence.
- (a) the fish processed shall not exceed the total amount permitted for that operation, including such limits on species and quantity as the respective county executive committee member responsible for fisheries may, in consultation with Director-General may set;
- (b) the operator of the fish processing facility shall ensure that—
 - (i) all relevant health, hygiene and environmental laws and standards of Kenya are complied with; and
 - (ii) no fish is accepted for processing which has been caught in illegal, unreported or unregulated fishing operations.
- (c) any change in the information submitted in the application form shall be notified to the respective county executive committee member responsible for fisheries as soon as practicable and in any case not later than three working days from the date of change; and
- (d) each licensee shall comply with the requirements of applicable laws in Kenya relating to food safety.
- (2) Each licence to engage in fish processing operations shall be posted in a conspicuous location and produced for inspection at the request of an officer or inspector authorized to carry out an inspection by the county executive committee member responsible for fisheries.
- (3) Any person who contravenes the provisions of this section commits an offence and shall be liable on

conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding five years or to both

- 113. (1) The period of validity of each fish processing licence shall not exceed one year, and shall be subject to renewal on an annual basis.
- Period of validity, renewal, additional conditions and suspension of fish processing licence.
- (2) A fish processing licence may not be renewed where grounds for denial of a licence described in section 93 exist or where the licensee has not complied with any applicable requirement under the laws of Kenya, and shall not be renewed where the applicant has been convicted of any offence under this Act or any other law relevant to the operation of a fish processing operation and the requirements of the judgment have been fully met.
- (3) Additional fees, terms and conditions may be amended or added during the period of validity.
- (4) Notwithstanding any other provision of this Act, a fish processing licence may be suspended or terminated where there has been non-compliance with this Act, the conditions of the licence or any other law of Kenya and the cause of such non-compliance has not been rectified and any fine, penalty, damages or determination made under the law have not been duly paid.
- 114. (1) An inspector appointed under this Act shall request such information and keep such records in relation to fish processing operations as may be authorized under this Act or required by the Director-General or the county executive committee member responsible for fisheries, as the case may be.
- (2) Information requested and records kept by an inspector in relation to fish marketing may include, *inter alia*, the following—
 - (a) name of the seller;
 - (b) name of the County;
 - (c) name of the village the seller is from;
 - (d) species of fish being sold;
 - (e) number of fish being sold;
 - (f) type of product being sold;

Inspectors to request information and keep records.

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Returns.

- (g) destination of the shipment;
- (h) name of the buyer;
- (i) date of sale;
- (j) date of shipment;
- (k) total weight of species being sold;
- (l) price per kilogram;
- (m) price of shipment;
- (n) means of transportation;
- (o) name of ship or plane;
- (p) number of flight or voyage; and
- (q) customs requirements.
- (3) Any person to whom a request for information is made by an inspector shall promptly furnish such information.
- (4) Each inspector shall, after inspection of a fish processing establishment, promptly provide the Director-General or the county executive committee member responsible for fisheries, as the case may be with a certificate of inspection.
- (5) A person who contravenes this section commits an offence and shall be liable on conviction to a fine not exceeding one hundred thousand shillings or to a term of imprisonment not exceeding three years or to both.
- 115. (1) For purposes of fishery conservation and management, the Director-General may require data returns from the sellers or buyers of such species the Director-General during such period species the Director-General specify, including information relating to the-
 - (a) quantity of fish bought or sold;
 - (b) name of the buyer or seller; and (c) origin of species sold or bought.
- (2) Any person to whom a request for data returns is made by the Director-General pursuant to subsection (1) shall promptly furnish such information.
- (3) A person who contravenes subsection (2) commits an offence and shall be liable on conviction to a fine not

exceeding one hundred thousand shillings or to a term of imprisonment not exceeding three years or to both.

Aquaculture

116. (1) No person shall establish or operate a Establishment and operation of commercial aquaculture establishment otherwise than aquaculture. under the authority of, and in accordance with the conditions of, an aquaculture licence granted by the Director-General under section 122.

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- (2) Any person who—
- (a) establishes or operates an aquaculture establishment in contravention of subsection (1);
- (b) harvests the products of such an establishment without the authority of the owner thereof

commits an offence and shall be liable, for a first offence, to a fine not exceeding one hundred thousand shillings or to imprisonment for a term not exceeding six months, or to both, and for a second or subsequent offence, to a fine not exceeding two hundred thousand shillings or to imprisonment for a term not exceeding one year, or to both.

- (3) This section shall apply to such aquaculture establishments as the Director-General may by notice in the Gazette, prescribe.
- 117. (1) The owner or lessee of an aquaculture establishment shall register such establishment with the Director-General and shall, for the purposes of the registration, provide to the Director-General—

Registration of Aquaculture Establishment, notice of transfer.

- (a) a full description of the establishment;
- (b) the name of the operator; and
- (c) such other particulars as the Director-General may require.
- (2) A person who is a buyer or transferee of an aquaculture establishment shall, within fourteen days after the sale or transfer, give notice of the sale or transfer to the Director-General.
- 118. (1) An application for an aquaculture permit shall be made to the Director-General in the prescribed form.

Aquaculture permits.

- (2) An aquaculture permit shall—
- (a) confer on the holder exclusive rights to harvest the products of the aquaculture establishment within the area specified in the permit;
- (b) be subject to such conditions as appear to the Director-General to be necessary or expedient for the regulation of aquaculture, the management of fisheries or for the economic benefit of Kenya and, without prejudice to the generality of the foregoing, may contain conditions relating to-
 - (i) the siting, design and materials used in the construction of the aquaculture establishment;
 - (ii) sanitary conditions for fish and fish products;
 - (iii) measures for the prevention of the escape of fish farmed for aquaculture;
 - (iv) measures for the prevention of fish diseases;
 - (v) the marketing of the fish and fish products of the aquaculture establishment; and
 - (vi) measures to be taken to minimize the escape of waste products and the pollution of land and water.
- (3) An aquaculture permit shall not be transferred without the prior written consent of the Director-General.
- (4) The Director-General may approve the application subject to the applicant being granted, where applicable, an environment impact assessment licence under the Environmental Management and Co-ordination Act, 1999.

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- 119. (1) An application for an aquaculture licence shall be made to the Director-General in such form as may be prescribed or required by the Director-General and be accompanied by such documents and information as the Director-General may require, including proof that the applicant is legally entitled to use the land or other area designated as the proposed site.
- (2) After receipt of an application pursuant to subsection (1), the Director-General shall ensure that any relevant environmental standards for the proposed aquaculture project are being met, including requirements

Application for an aquaculture licence.

for siting, emissions and other relevant matters under the Environment Management and Coordination Act, 1999, and may, in consultation with the relevant County, determine whether the applicant is required to submit an environmental assessment of the proposed aquaculture project.

- (3) If the applicant is required to undertake an environmental impact assessment under the Environmental Management and Co-ordination Act, 1999 the application shall be accompanied by a copy of any environmental impact assessment report and the recommendations of any body responsible for reviewing the environmental impact assessment report.
- (4) The applicant shall give notice of the application, in such manner as may be prescribed and at the applicant expense, to such person or persons, including the public in general, as the Director-General may determine, and such notice shall invite all those to whom it is addressed to submit in writing to the Director-General, within thirty days from the date of the notice, any objections to or representations in connection with the application.
- (5) If, before a licence is issued, there is any change in the particulars submitted under subsection (1) or, where an environmental assessment is required, any change in the information on which the environmental assessment is based, the applicant shall immediately communicate such change or changes in writing to the Director-General.
- (6) A person who contravenes subsection (1), (4) or (5) commits an offence and shall be liable on conviction to a fine not exceeding one hundred thousand only or to a term of imprisonment not exceeding one year or to both.
- 120. (1) When considering an application submitted pursuant to section 122, the Director-General may have regard to—
- Standards for approval of aquaculture licence.
- (a) the technical and financial ability of the applicant to exercise the rights sought in the application in a satisfactory manner;
- (b) the species of fish that the applicant proposes to farm and the method of aquaculture that the applicant proposes to employ; and

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- (c) any other matters applicable to the licence that, in the opinion of the Director-General, are relevant.
- (2) Where more than one person applies for a licence covering all or part of the same site, preference in relation to that site shall be given to the applicant who, in the opinion of the Director-General in consultation with the relevant County, is the best overall applicant based on the information contained in the applications.
- 121. (1) The Director-General may require an authorized officer to inspect any site proposed by a licence applicant for the establishment of an aquaculture establishment to determine the suitability or otherwise of such site for use as an aquaculture establishment.

Inspection of proposed site.

- (2) The Director-General may require an applicant to pay such fee for the inspection carried out pursuant to subsection (1) as may be prescribed.
- 122. (1) The period of validity of each commercial aquaculture licence shall not exceed ten years, and shall be subject to renewal on an annual basis.

Conditions for aquaculture licences.

- (2) The Director-General may issue an aquaculture licence subject to any conditions the Director considers appropriate, including conditions relating to—
 - (a) the siting, design, equipment and materials to be used in the construction of the aquaculture establishment;
 - (b) the control of species of aquatic life that may be introduced into such facility;
 - (c) the promotion of sanitary conditions in the handling of fish and in the preparation and processing of fisheries and aquaculture products;
 - (d) preventing the escape of fish from an aquaculture establishment;
 - (e) preventing and controlling the spread of diseases to fish:
 - (f) marketing of fish and fisheries products of an aquaculture establishment;
 - (g) the disposal of dead fish or waste from an aquaculture establishment operated by the licensee

- including relevant consents and notifications required;
- (h) the control and monitoring of water quality in the aquaculture area;
- (i) the use of any chemicals or pharmaceuticals, drugs, antibiotics or other chemicals;
- (j) pollution in the proposed area of operation;
- (k) employment of a reasonable number of Kenya citizens;
- (1) the composition of the feed which may be used;
- (m) the types of manures or fertilizers which may be used;
- (n) the use of hormones for controlling reproduction or promoting growth;
- (o) the disposal of dead or diseased aquaculture products, material or waste resulting from aquaculture;
- (p) the keeping of records;
- (q) compliance with conditions under other relevant legislation in Kenya; and
- (r) such other conditions as may be required or prescribed.
- (3) The Director-General may require as a condition of licence that—
 - (a) such licence for aquaculture automatically terminate if the facility is not developed within the period of time specified on the licence.
 - (b) the cost of any destruction or damage during the licensing period that is caused by the negligence or malpractice of the licence holder, including the endemic spread of diseases, shall be borne by the licence holder.
- (4) A person who contravenes any condition issued under subsection (1) or (2) commits an offence and shall be liable on conviction to a fine not exceeding two hundred thousand or to a term of imprisonment not exceeding three years or to both.

123. An aquaculture licence shall confer on the holder exclusive rights to harvest the products of the relevant aquaculture establishment within the area specified in the licence.

Exclusive rights.

PART XI — COMPLIANCE WITH, LICENCES, AUTHORIZATIONS AND REQUIREMENTS FOR FISHING VESSELS

124. (1) No person shall, except under the authority of and in accordance with a valid and applicable licence or authorization issued pursuant to this Act-

Unlicensed activities prohibited.

- (a) on the person's own account or in any other capacity, engage in any activity;
- (b) cause or permit a person acting on their behalf to engage in any activity; or
- (c) use or permit a vessel to engage in fishing or a related activity of a kind or type, or at a time, or in a place or manner, for which a licence or authorization is required under this Act.
- (2) For the purposes of this Act, where a vessel is used in the commission of an offence, the owner, operator, master and charterer shall each be deemed to have committed the offence.
- (3) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand or to a term of imprisonment not exceeding five years or to both.

125. Where a foreign fishing vessel—

Foreign fishing vessels.

- (a) enters the Kenyan fishery waters except for a purpose recognised by international law or relevant law of Kenya;
- (b) fishes within the territorial sea of Kenya, or
- (c) is used for fishing or fishing-related activities in the fisheries waters, except pursuant to the requirements of this Act,

the operator and master each commits an offence and shall each be liable on conviction to a fine not exceeding fifty million shillings or to an imprisonment of a term of more than one year or to both. 126. (1) The operator and master of a—

- Stowage of fishing gear.
- (a) a semi-industrial or industrial fishing vessel in any place in the Kenyan fishery waters; or
- (b) Kenya fishing vessel—
 - (i) navigating through an area under the jurisdiction of another State where it does not have a licence to fish; or
 - (ii) at all times when navigating in an area of the high seas to which international conservation and management measures apply where it has not been authorized to fish in that area pursuant to this Act,

shall ensure that all fishing gear on board is at all times stowed or secured in such a manner that it is not readily available for fishing unless the vessel is authorized to engage in fishing in that area of the Kenyan fishery waters or the high seas in accordance with an international agreement, international conservation and management measures or authorization of another State recognized by Kenya as being applicable to the relevant area.

- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not less than five million shillings or to imprisonment for a term not less than five years or to both.
- 127. (1) Except as otherwise provided pursuant to this Act, no person shall engage in transhipment activities at sea.
- Transhipment at sea prohibited.
- (2) Any person including the operator of a vessel used for transhipment, who contravenes the provisions of subsection (1) commits an offence and shall be liable on conviction to a fine not less than ten million shillings or to a term of imprisonment not less than ten years or to both.

PART XII —REQUIREMENTS FOR FOREIGN FISHING VESSELS OR VESSELS FISHING UNDER CHARTER ARRANGEMENTS

128. (1) The Cabinet Secretary may, on behalf of the Government of Kenya and in accordance with the provisions of this Act, any applicable international agreement and national policies and strategies, and taking

Fisheries access.

into account the advice of the Fisheries Advisory Council established under Section 6, permit access by foreign fishing vessels to the fishery waters for fishing or fishing related activities.

- (2) Permission under Subsection (1) may be given pursuant to—
 - (a) such international agreement, fisheries partnership agreement, joint venture or other written agreement or arrangement setting out the terms and conditions of fisheries access as are required pursuant to this Act and additional terms and conditions as may be recommended by the Director-General, with-
 - (i) States or regional economic integration organisations;
 - (ii) any fishing association or similar body;
 - (iii)a publicly incorporated company; or
 - (iv) such other persons or bodies as the Cabinet Secretary considers appropriate; and/or
 - (b) an access right granted by the Cabinet Secretary, taking into account the provisions of subsections (1) and (2) and in consultation with the Director-General, in accordance with such conditions as he may require and as may be prescribed, including the—
 - (i) maximum number of such rights to be granted for a given period of time;
 - (ii) maximum period of time during which such right can be held;
 - (iii) fishery or fisheries to which rights-based access applies;
 - (iv) qualifications of applicants for such rights;
 - (v) procedures for application for such rights;
 - (vi) criteria for the grant of such rights;
 - (vii) conditions for the use of such rights;

- (viii)transferability of such rights; and
- (ix) conditions for the cancellation or revocation of such rights; or
- (c) a determination by the Cabinet Secretary, on the recommendation of the Director-General, that each vessel meets the requirements under this Act for licence issuance, including the standards for licence approval in section 90 and such other requirements that may be prescribed or required by national policy or by notice in the *Gazette* and—
 - (i) the vessel, its operator, master and beneficial owner have not engaged in or were not reasonably suspected to have engaged in illegal, unreported or unregulated fishing in any place during the five-year period prior to application for the license; and
 - (ii) the Cabinet Secretary determines there are clear benefits to Kenya for issuing such a licence.
- (3) Fisheries access granted pursuant to subsection (2) shall be subject to this Act and such other terms and conditions as may be required by the Cabinet Secretary on the advice of the Director-General.
- (4) The Director-General shall, in respect of each proposed arrangement, right and licence for fisheries access determine—
 - (a) the estimated value of the fisheries to the other party; and
 - (b) the designated area, an access fee and other required benefits to Kenya, except that such fee or benefits shall not include development assistance or benefits that are unrelated to the value of the fisheries access.
- (5) Fisheries access shall be permitted solely for purposes of fishing or fishing related activities in the exclusive economic zone or at a designated port, and shall not be permitted for any activity in the territorial sea except for navigating directly through it to port.

(6) No licence or other authorization for fishing or fishing related activities shall be issued to a foreign fishing vessel unless fisheries access has been granted in accordance with this Act.

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- 129. In addition to any other terms or conditions for fisheries access that may be prescribed or required, each agreement, arrangement, right, licence and authorization for fisheries access shall require—
 - (a) the operator to comply with all laws of Kenya;
 - (b) the operator to hold, in respect of the vessel, a valid and applicable licence or authorization from the State in which it is registered to carry out fishing or fishing related activities in the fisheries waters;
 - (c) the operator to hold, in respect of the vessel, a valid and applicable license for fishing or fishing related activities issued in Kenya;
 - (d) that the vessel is included on a list of authorized vessels maintained by any competent regional fishery body to which Kenya is a party or a cooperating non-party in accordance with the rules of that body;
 - (e) that the vessel is not included on a list of illegal, unreported or unregulated fishing vessels maintained by any competent regional fishery body to which Kenya is a party or a cooperating non-party in accordance with the rules of that body, and that that access shall automatically terminate should the vessel be included on such a list:
 - (f) the other party to take all measures required to ensure compliance with the requirements for fisheries access and otherwise pursuant to this Act, including by posting a performance bond in accordance with section 134 if required;
 - (g) where fisheries access is agreed with a corporation, association or other body acting on behalf of its members or other persons, it shall be liable for the undischarged liabilities of its members or other persons arising out of any

Fisheries access requirements.

- operations under the agreement and the agreement itself, including fees;
- (h) that any trade-related undertakings are consistent with the rules of the World Trade Organization;
- (i) the flag States of the vessels to fully comply with their duties and responsibilities as flag States under international law and standards as reflected in international fisheries instruments;
- (j) fees, levies and other charges to be fully paid at the required time, and all other undertakings are discharged within a stated time, or access will automatically terminate should this not be done; and
- (k) such other requirements that may be made in accordance with the principles and objectives of this Act and as appropriate to implement any international obligation or undertaking of Kenya.

130. (1) Fisheries access shall, if agreed for more than one year, be subject to annual renewal based on a review which shall assess, *inter alia*—

Fisheries access

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- (a) the compliance by the other party with the laws of Kenya and the terms of the access agreement, arrangement, right, licence or authorization;
- (b) the realized benefits to Kenya under the access agreement or arrangement for the preceding year;
- (c) the estimated value of the continuing fisheries access provided; and
- (d) such other matters as may be prescribed or required by the Cabinet Secretary in accordance with this Act.
- (2) Fisheries access may be terminated or suspended at any time by the Cabinet Secretary on the advice of the Advisory Council and Director-General—
 - (a) according to its terms or upon material noncompliance by the other party with this Act or any other requirement for fisheries access, and the other party shall be given reasonable notice of such termination or suspension to ensure the prompt termination of fishing or fishing related activities; or

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- (b) that continued fishing at current levels would pose a risk to the fish stocks based on a precautionary approach, or on such other ground for suspension or limitation as may be specified in this Act.
- (3) Suspension of fisheries access or fishing in accordance with subsection (2) or (3) may be for such time or until such conditions are met as the Cabinet Secretary may require.
- 131. (1) No agreement governing joint ventures, or the chartering of any foreign fishing vessel for fishing or fishing related activities within or beyond the Kenya fishery waters, whether or not it involves changing the registration of the vessel, shall be valid unless and until it is approved by the Cabinet Secretary on the advice of the Director-General

Requirements for joint venture and charter agreements, rights and vessel licensing for foreign fishing vessels.

- (2) A joint venture or charter agreement may be approved only where the following requirements are fully met—
 - (a) a charter agreement vests operational control of the foreign fishing vessel in a Kenya citizen, resident or registered company;
 - (b) the joint venture or charter agreement provides clearly identifiable benefits with no adverse effects to Kenya, its fisheries or its marine environment, including—
 - (i) development of the Kenya fishing industry;
 - (ii) training of Kenya citizens;
 - (iii)foreign exchange earnings for Kenya;
 - (iv)investment in Kenya;
 - (v) landing and domestic distribution activities; and
 - (vi)development of export activities;
 - (c) establishment of a company under the Companies Act, with specified ownership, control and equity by Kenya citizens;
 - (d) the joint venture, charter agreement, right or vessel approved under this Act, is in full compliance with all applicable laws in Kenya;

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- (e) full and complete evidence is submitted, as the Cabinet Secretary may require, that all financial obligations of the foreign fishing vessel will be met promptly and effectively, including payment of all fees and any applicable fine, penalty or other determination which may result from the vessel's activities; and
- (f) in respect of a charter agreement, that the flag State is responsible for exercising full and effective control over the vessel when it is in areas beyond the national jurisdiction of Kenya.
- (3) Unless a company is otherwise established under a joint venture or charter agreement, where the operator of the foreign fishing vessel is a company incorporated outside Kenya and doing business in Kenya, it shall establish a place of business in Kenya that includes the requirements for significant benefit to Kenya under subsection (2)(b) and shall comply with the requirements of Part XVIII of the Companies Act.
- (4) Any vessel fishing under an approved charter agreement shall be subject to all requirements of this Act in respect of foreign fishing vessels, including licensing and compliance agreements.
- 132. (1) The operator of each foreign fishing vessel licensed pursuant to section 131 shall designate an agent in accordance with the terms of such agreement authorised to accept on behalf of the company service of process and any notices required to be served on the company and to provide such information as may be required under this Act with respect to the vessel and its activities, operator, master and crew members.
- (2) Notwithstanding subsection (1), where a company has been established under the Companies Act for purposes of obtaining a licence for fishing or fishing related activities under this Act, such company shall designate in writing to the Director-General promptly upon its incorporation—
 - (a) the full address of the registered or principal office of the company and their principal place of business in Kenya;
 - (b) the present name and any former forename or surname, address and occupation of the person authorised to manage the company in Kenya;

Agents or companies to designated for purposes of legal process, information.

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- (c) a list of the directors of the company, containing such particulars with respect to the directors as are by this Act required to be contained with respect to directors in the register of the directors of a company; and
- (d) the names and addresses of one or more persons continuously resident in Kenya authorised to accept on behalf of the company service of process and any notices required to be served on the company and to provide such information as may be required under this Act with respect to the vessel and its activities, operator, master and crew members,

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- (3) In the event of any alteration being made in the instrument or in the address or in the directors or managers or in the names or addresses of such persons, the company shall promptly deliver to the Director-General a notice of the alteration.
- (4) Each agent designated pursuant to subsections (1) and (2) shall—
 - (a) be continuously resident in Kenya;
 - (b) have no record of conviction;
 - (c) have no record of association with illegal, unreported or unregulated fishing activities;
 - (d) where relevant carry out duties as required pursuant to the Companies Act, and other laws in Kenya relating to agents;
 - (e) provide such information as may be required pursuant to this Act in relation to the relevant foreign fishing vessel, subject to the section 85 on rules of confidentiality in this Act;
 - (f) receive and respond to legal process with respect to the vessel and its activities, operator, master and crew members;
 - (g) comply with all laws of Kenya;
 - (h) not exceed the authority as an agent; or
 - (i) not engage in any activity that constitutes or is likely to constitute a conflict of interest with his or her duties and responsibilities of the agent under this Act and the laws of Kenya.

- (5) The operator of each foreign fishing vessel required to designate an agent pursuant to subsection (1) or (2) shall ensure that the agent—
 - (a) has full legal authority and is sufficiently informed at all times in order to carry out assigned responsibilities pursuant to this Act including the requirements in subsection (3); and
 - (b) complies with all requirements in subsection (3).
- (6) No licence shall be issued to a foreign fishing vessel unless an agent has been designated in accordance with this section.
- (7) Where any operator does not comply with subsection (4), the licence may be—
 - (a) suspended for such period as the Director-General, in consultation with the Cabinet Secretary, thinks fit, but not less than one month; or
 - (b) revoked, and

the operator shall fully disclose information regarding the agreement between the operator and the agent in addition to the requirements of section 102 of this Act.

- (8) A person who contravenes the requirements of subsections (1), (2), (3) or (4) of this section commits an offence and shall be liable on conviction to a fine not exceeding one million shillings or to a term of imprisonment not exceeding five years or to both.
- 133. The holder of a licence issued for purposes of fisheries access pursuant to this Part shall, in the conduct of all relevant activities, give preference to:

Preference for Kenya products.

- (a) materials and products made in Kenya;
- (b) service agencies located in Kenya and owned by—
 - (i) Kenya citizens;
 - (ii) companies or partnerships incorporated or registered in Kenya; and
 - (iii) public corporations.
- 134. (1) The Cabinet Secretary may require either as a precondition of issuing a licence to any fishing vessel other

Performance bond.

than a Kenya fishing vessel, or at any time during the licensing period, that a performance bond be provided by the applicant in accordance with such procedures and in such form as may be prescribed.

- (2) Performance bonds prescribed under subsection (1) shall serve as a financial assurance for the fulfilment of all obligations arising out of the licence and this Act, including potential costs relating to rescue, recovery of other costs and fines, penalties or compensation for violations against this Act, and shall be drawn upon in such manner as may be prescribed.
- (3) The amount of financial assurance provided under this section shall be determined by the Director-General in consultation with the Board and having regard to any applicable fishery management plan and the value of the relevant fishery—
- (4) The forms of financial assurance acceptable under this section may be any or a combination of the following—
 - (a) surety bond;
 - (b) trust fund with pay-in period;
 - (c) insurance policy;
 - (d) cash deposit;
 - (e) annuities.
- (5) Where a licence-holder is obligated to provide a financial assurance under this section and fails to do so, The Director-General shall—
 - (a) cause a notice of demand to be served on the licence-holder a notice of demand; and
 - (b) cause a note of the service of the notice to be registered in a Magistrate's Court.
- (6) If by the end of the period specified in the notice of demand under subsection (5) the financial assurance required from the licence-holder under this section—
 - (a) has been provided, the notice shall thereupon cease to have effect, and the Director-General shall cause the registry endorsement to be cancelled; or

- (b) has not been provided, the applicable licence shall be liable to cancellation by the Cabinet Secretary.
- 135. A foreign fishing vessel may be permitted entry into port for reasons of *force majeure* or distress exclusively for the purpose of rendering assistance to persons, ships or aircraft in danger or distress.

Force majeure or distress.

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PART XIII— MONITORING, CONTROL AND SURVEILLANCE

Powers of authorized officers

136. (1) An authorized officer may do all such acts and things and give such directions as are reasonably necessary for the purposes of exercising any of his/her powers under this Act.

Authority and general powers of authorized officers.

- (2) An authorized officer may use such force as may be reasonably necessary to enable the exercise of his or her powers under this Act.
- (3) An authorized officer bringing or ordering a vessel to a place in Kenya in accordance with this Act, or in other circumstances where the need for assistance in enforcing this Act is immediate and overwhelming, may require any person to assist him or her, and that person shall be deemed to be an authorized officer for the purposes for and time during which the authorized officer is required to act.
- (4) Where an authorized officer is required to undertake duties in areas beyond national jurisdiction, unless provided otherwise in an international agreement or arrangement, the provisions of this Act are applicable as if the duties were performed within areas under national jurisdiction.
- (5) Where an authorized officer has been appointed in accordance with section 18 or is otherwise serving under the authority of another State where such State is party to an applicable international agreement or arrangement with the objective of carrying out fisheries monitoring, control and surveillance operations jointly or cooperatively with the Government of Kenya, he or she shall make such reports to the Director-General as may be required pursuant to the terms of such international agreement or arrangement.

- (6) Monitoring Control and Surveillance (MCS) in this section means "the mechanism for implementation of agreed policies, plans or strategies for oceans and fisheries management and includes collection, measurement and analysis of data and information on fishing activities and using the same to specify the terms and conditions under which fisheries resources can be harvested; checking and supervising fishing activities to ensure all applicable laws and regulations are being observed by the fishers and all licence holders and the components include surveillance on land, air and the sea."
- 137. (1) An authorized officer in exercising any power conferred by this Act shall, upon request, identify himself or herself and produce evidence that he or she is an authorized officer.

Identification of authorized officers.

(2) The production by any authorized officer of any identification document issued to him or her shall, until the contrary is proved, be sufficient authority for any such authorized officer to do anything which he or she is authorized by this Act to do.

and boarding and inspection.

Declaration of boarding and inspection.

- 138. (1) Authorized officers, inspectors, observers and other personnel conducting boarding and inspection of fishing vessels shall certify their presence by signing such Declaration of Boarding and Inspection form as may be prescribed or required by the Director-General and promptly providing it to the Director-General.
- (2) The Boarding and Inspection Form referred in subsection (1) shall be completed by an authorized officer or inspector who has participated in the boarding and inspection of a fishing vessel pursuant to this Act, other than a boarding and inspection in port, and such authorized officer or inspector shall promptly provide it to the Director-General.

139. An authorized officer may, following hot pursuit from within the Kenya fishery waters in accordance with international law, stop board and search outside the fisheries waters any vessel which the authorized officer has reasonable grounds to believe has been used in the commission of an offence under this Act, exercise any powers conferred by this Act and bring such vessel and all persons and things aboard back into the Kenya fishery waters.

Powers of hot pursuit.

Powers of entry and search of authorized officers.

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- 140. (1) An authorized officer may, in the performance of his functions under this Act, without a warrant at any reasonable time—
 - (a) stop, enter, board, stay on board, examine and search any vessel, vehicle or aircraft, including—
 - (i) any Kenya vessel outside the fisheries waters; and
 - (ii) any other vessel to which this Act or any international agreement applies;
 - (b) enter, examine and search any premises or place, other than premises used exclusively as a dwelling house, or which are part of or attached to a dwelling house, which the authorized officer reasonably suspects are used for activities falling within the scope of this Act and—
 - (i) in or on which he has reason to suspect that evidence of an offence against this Act may be found; or
 - (ii) which it is necessary or expedient to enter or search to ascertain whether this Act is being or has been complied with;
 - (c) stop any person and examine any record, article, container, gear, apparatus, device, or fish in the possession of that person; and
 - (d) pass across any land,

and may examine and search any document, record, article, container, gear, equipment, apparatus, device, container, fish and contents of any kind found therein or thereon.

- (2) An authorized officer may detain any person, vessel, vehicle, or aircraft, parcel, package, record, document, article, gear, equipment, apparatus, device, container, fish or thing for such period as is reasonably necessary to enable the authorized officer to carry out an examination or search under this section.
- (3) An authorized officer may, in respect of premises used exclusively as a dwelling house, only conduct searches and seizures in accordance with this section with a warrant issued by a court of competent jurisdiction.

Power to take, detain, remove and

secure information

- 141. (1) An authorized officer may, for purposes and activities falling within the scope of this Act—
 - (a) inspect, take, detain and secure samples, documents, logbooks or other information, or copies thereof, from any vessel, premises, facilities or other place, other than premises used exclusively as a dwelling house but including premises that are part of or attached to a dwelling house used for activities falling within the scope of this Act;
 - (b) make or take copies of any record, and for this purpose may take possession of and remove from the place where they are kept any such records, for such period of time as is reasonable in the circumstances;
 - (c) if necessary, require a person to reproduce, or assist the authorized officer to produce in a useable form, information recorded or stored in a document;
 - (d) require any person associated or apparently associated with a vessel, premises, facilities or other place or activity falling within the scope of this Act, to provide such information as may be reasonably required for the monitoring or enforcement of this Act; and
 - (e) otherwise remove and secure any item that may reasonably be considered to be evidence of an offence against this Act.
- (2) Where an authorized officer is questioning a person pursuant to subsection (1), among other things—
 - (a) require the person being questioned to provide answers including any explanation or information concerning any vessel or any place or thing or fishing method, gear, apparatus, record, document, article, device, or thing relating to the taking, sale, buying, trade, import, export or possession of any fish; and
 - (b) require that person or any other person to produce any permit, authority, approval, permission, licence, certificate or other document issued in relation to any vessel or person.

Power of arrest.

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- **142.** (1) An authorized officer may, arrest any person—
 - (a) whom he believes, on reasonable grounds, is committing or has committed an offence under this Act:
 - (b) who assault him or any other authorised officer, inspector, observer or fishery dock observer in the exercise of his powers or performance of his functions under this Act, or
- (2) If an authorized officer arrests a person under subsection (1) the authorized officer shall cause the person to be delivered into the custody of a member of the Kenya Police Force as soon as practicable and that person shall thereafter be dealt with in accordance with the relevant law or laws.
- 143.(1) An authorized officer may, if he believes that direction a vessel is being or has been used in contravention of the provisions of this Act or of the conditions of any license, authorization, authority, approval, permission, registration or certificate issued or otherwise effected under this Act—

Power to give

- (a) order the vessel as soon as reasonably practicable to the nearest available port in Kenya or such port as may be agreed between the master and the authorized officer; and
- (b) remain in control of the vessel at such port for such period as may be reasonably necessary for the purpose of the authorized officer to exercise any other powers under this Act, until the authorized officer permits the master to depart from that place, provided that the period shall not exceed seventy-two hours in total where there are no reasonable grounds to suspect contravention of this Act.
- (2) After an authorized officer has given a direction under subsection (1), the authorized officer may also give to the master or any other person on board the vessel any reasonable direction in respect of any activity, method, procedure, item, gear, document, fish, property or thing while the vessel is proceeding to or remains in port.
 - **144.** (1) For the purposes of this section—

- (a) a vessel's equipment, gear, furniture, appurtenances, stores, cargo and aircraft shall be deemed to form part of the vessel;
- (b) aircraft operating independently of a vessel shall be subject to this section; and
- (c) "Court" means the High Court.
- (2) An authorized officer may seize:
- (a) any vessel or other conveyance, fishing gear, implement, appliance, material, container, goods, equipment or thing which the authorized officer believes on reasonable grounds is being or has been or is intended to be used in the commission of an offence against this Act;
- (b) any fish which the authorized officer believes on reasonable grounds is being, or has been taken, killed, transported, bought, sold or found in the possession of any person in contravention of this Act and any other fish with which such fish is intermixed;
- (c) any article, record or thing which the authorized officer believes on reasonable grounds may be or may contain evidence of an offence against this Act;
- (d) retain any passport and seaman's book—
 - (i) of the master and crew of a vessel directed to return to and remain in port pursuant to this Act until the vessel is permitted to depart;
 - (ii) of any person arrested, until that person is brought before a court; or
 - (iii)pursuant to any order of the Court; and
- (e) any other item which the authorized officer has reasonable grounds to believe—
 - (i) has been or is being used in the commission of an offence against this Act;
 - (ii) has been seized or forfeited under this Act; or
 - (iii)has been unlawfully removed from the custody under this Act.

- (3) Anything seized pursuant to subsection (1) shall be delivered into the custody of the Director-General.
- (4) The authorized officer shall supply a written notice of seizure stating the reasons thereof to the person from whom any article or thing is seized or any person whom the authorized officer believes is the owner or is otherwise entitled to possession of the article or thing seized.
- 145. (1) An authorized officer may remove any part from the vessel seized pursuant to this Act for the purpose of immobilizing that vessel where the operator is in cooperative but in any event, the authorized officer shall take reasonable measures to ensure that such removal shall not cause a permanent or material damage to the vessel.
- (2) Any part or parts removed under subsection (1) shall be kept safely and returned to the master or owner of the vessel upon release.
- (3) No person shall, otherwise than an authorized acting under the authority of the Director-General—
 - (a) hold or arrange to obtain any part or parts removed under subsection (1);
 - (b) hold or arrange to obtain or make any replacement or substitute part or parts for those removed under subsection (1); or
 - (c) fit or attempt to fit any part or parts or any replacement or substitute part or parts to a vessel immobilised pursuant to this Act.
- (4) A person who contravenes subsection (3) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding one year or to both.
- 146. (1)Where an authorized officer has reason to believe that any fishing vessel, fishing gear, fish or fish product has been abandoned for the purpose of avoiding prosecution, he shall apply to the Court for an Order to dispose of the fishing vessel, fishing gear, fish or fish product.
- (2) Where a fishing vessel or fishing gear or fish product is abandoned, and an authorized officer or

Removal of parts from seized vessels, etc.

Authority of authorized officer or inspector in relation to abandoned fishing vessels, fishing gear, fish or fish products.

inspector believes that any person is liable to be investigated, searched or arrested in connection with a commission of an offence under this Act, or that such person has absconded to any place within or outside Kenya, or has concealed himself so that he cannot be searched, arrested or otherwise investigated, the authorized officer or inspector may cause investigation measures to be taken in relation to the area or premises and property previously in possession, occupation or under control of the suspect.

Appointment and functions of, observers and inspectors

- 147. (1) There shall be established an observer programme Board for the purpose of collecting, recording and reporting reliable and accurate information for scientific, management, and compliance purposes including, among other things—
 - (a) the species, quantity, size, age, and condition of fish taken:
 - (b) the methods by which, the areas in which, and the depths at which, fish are taken;
 - (c) the effects of fishing methods on fish, and the environment;
 - (d) all aspects of the operation of any vessel;
 - (e) processing, transportation, transhipment, storage, or disposal of any fish;
 - (f) monitoring the implementation of management measures and applicable international conservation and management measures; and
 - (g) any other matter that may assist the Director-General to obtain, analyse, or verify information for fisheries scientific, management, and compliance purposes.
- (2) Observers may be deployed as may be directed by the Director-General in accordance with this Act, or any applicable international agreement or arrangements, including an agreement or arrangement with the objective of carrying out fisheries monitoring, control and surveillance operations jointly or in co-operation with the Government of Kenya, or any international conservation

Observer programme. and management measures on any vessel used for fishing, transhipment, transportation or landing of fish within and beyond the Kenyan fishery waters and such other uses as may fall within the scope of this Act.

148. (1) The Director-General may, in writing, appoint—

Appointment of, and identification by inspectors and observers.

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- (a) inspectors for purposes of monitoring compliance and management and auditing, including inspections of vessels, premises and facilities and aquaculture establishments to gather information, and report on the fulfilment of pre-licensing requirements and any obligations pursuant to this Act; and
- (b) observers for purposes of the observer programme established under section 147, in accordance with such standards and procedures as may be prescribed or approved by the Board.
- (2) An inspector or observer shall on request identify himself and produce proof of identification as an inspector or observer.
- 149. Any observer who performs duties in areas beyond national jurisdiction in accordance with this Act, any international agreement or international conservation and management measures shall, unless the contrary is provided, continue to be subject to all provisions of this Act, and all proof of identification as an operators, crew members or other relevant persons towards such observer under this Act shall be fully applicable.

150.(1) The operator of any fishing vessel required as a condition of licence granted to it to land all or part of its catch in Kenya shall cause such landings to take place only where an observer or inspector is present to monitor the offloading and otherwise perform his/her functions pursuant to this Act.

(2) An operator who does not comply with subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings, and in addition the applicable licence shall be cancelled and no further licence shall be issued for at least one year from the time of the offence in respect of the vessel or operator.

Application of Act to observers in areas beyond national jurisdiction.

Requirements for monitoring of off loading.

Duties of operators, etc, to inspectors and observers.

- 151. (1) The operator and each crew member of any vessel, or licence holder in respect of any vessel on which an observer is placed or to which an inspector or fishery dock observer has been assigned, shall allow and assist the inspector, observer or fishery dock observer, in the performance of his official duties, and shall allow the inspector, observer or dock observer to—
 - (a) board such vessel at such time and place as the Director-General may require;
 - (b) receive and transmit messages and communicate with the shore and other vessels by means of the vessel's communications equipment;
 - (c) take photographs of the fishing operations, including fish, gear, equipment, documents, charts and records, and remove from the vessel such photographs or film as he may have taken or used on board the vessel;
 - (d) gather such information relating to fisheries as may be required for purposes of carrying out the objectives of this Act; and
 - (e) disembark at such time and place as the Director-General may require or in accordance with an applicable access agreement, provided it is in accordance with the safe operation of the vessel.
 - (2) The provisions of subsection (1) shall apply—
 - (a) when the vessel is at any place in the fisheries waters or such other place where fish taken from the fisheries waters is unloaded or transhipped as may be required in the applicable licence, access agreement or international conservation and management measures, or as may be otherwise authorized under any applicable access or other agreement, or in the applicable licence; and
 - (b) in the case of a Kenya fishing vessel operating under an authorization to fish in the high seas in areas subject to international conservation and management measures, when the vessel is on the high seas in an area subject to such international conservation and management measures or otherwise in accordance with such measures or the applicable license or authorization.

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- (3) An operator and crew member of any vessel, or licence holder in respect of any vessel on which an observer is placed or an inspector is assigned in accordance with this Act who does not comply with subsection (1) commits an offence and shall be liable on conviction to a fine not less than ten million shillings or to a term of imprisonment not less than five years or to both.
- **152.** (1) The operator and licence holder in respect of any vessel on which an observer is placed shall-

Conditions for observers

- (a) provide full board, accommodation and access to any (cooking and toilet) facilities and amenities at officer level or similar standard approved in writing by the Director-General and free of charge at all times;
- (b) provide a safe work area adjacent to the sample collection site, for sampling and storage of fish to be sampled, of 4.5 square meters, including the observer's sampling table and which permits the observer to stand upright and have a work are at least 0.9 m deep in the area front of the table and scale;
- (c) notify the observer at least fiffteen minutes before fish are brought on board, or fish and fish products are transferred from the vessel, to allow sampling the catch or observing the transfer;
- (d) collect bycatch when requested by an observer;
- (e) collect and carry baskets of fish when requested by an observer;
- (f) allow an observer to determine the sex of fish when this procedure will not decrease the value of a significant portion of the catch;
- (g) take measurements, including of decks, codends, and holding bins; and
- (h) ensure that transfers of observers at sea via small boat or raft are carried out during daylight hours, under safe conditions, and with the agreement of any observer involved.
- (2) An operator or licence holder of a vessel who contravenes subsection (1) commits an offence and shall

be liable on conviction to a fine not exceeding two million shillings or to a term of imprisonment not exceeding three years or to both, and in addition the applicable licence or authorization may be suspended or cancelled.

Protection of and duties owed to authorized persons

- 153. For the purposes of this portion, "authorized person" includes any authorized officer, inspector or observer appointed pursuant to this Act.
- Authorized persons.
- 154. (1) No liability shall attach to the Service and its officers, employees or other persons acting under the authority of the Service, including persons with delegated authority and any person assisting an authorized officer pursuant to section 19, for any damage sustained by any person as a result of any act or omission done or made in good faith in performance of their duties under this Act or any other law relating to fisheries.

Protection of authorized persons from liability.

- (2) Where a vessel is being brought to a place in Kenya in accordance with this Act,
 - (a) and the master is required to remain in control the master shall be responsible for the safety of the vessel and each person on board the vessel until the vessel arrives at the designated place; and
 - (b) no claim may be made against any authorized person in respect of any death, injury, loss or damage that occurs while the vessel is being brought to such place.
- (3) The State shall not be held directly or indirectly liable for an act or omission of any authorized person or person assisting an authorized officer, unless such person would incur liability for the act or omission.
- 155. The Service shall ensure full group insurance coverage for all authorized persons.

Insurance for authorized persons.

- 156.(1) For the purposes of this section "fail" includes any effort which does not result in meeting the specified requirement.
- Obstruction, etc of authorized persons.
- (2) No person being the operator or a crew member of a vessel—
 - (a) fail or refuse to allow and assist any person identified as an authorized person—

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- (i) to safe board the vessel:
- (ii) to have full access to and use of all facilities, gear and equipment on board which such authorized person may determine are necessary to carry out his duties, including full access to the bridge, fish and fish products on board, fishing gear and areas which may be used to hold, process, weigh or store fish; that are not of a specified size or dimension;
- (iii)to have full access to the vessel's records including its logs, charts and documentation and other information relating to fishing, whether required to be carried and maintained under this Act or otherwise, for purposes of carrying out functions and exercising powers under this Act, including records inspection and copying;
- (iv)to have access to all navigational and communications equipment;
- (v) to take, measure, store on or remove from the vessel and retain, such reasonable samples or whole specimens of any fish as may be required for scientific purposes;
- (vi)where such person is forced by circumstances to stay on board the vessel for a prolonged period of time, provide him, while on board the vessel, with food, accommodation and medical facilities equivalent to that accorded to officers of the vessel, at the expense of the operator; and
- (vii) to safe disembark from the vessel;
- (b) fail or refuse to allow an audit, inspection, examination or search which is authorized by or under this Act to be made or impedes the conduct of such audit examination or search;
- (c) in respect of any premises, facility, including those used for aquaculture, cold storage, export and processing, landing site or other place where person(s) engage in activities within the scope of this Act fail or refuse to facilitate by all reasonable

- means the entry into and inspection by an authorized person in accordance with this Act of-
- (i) the entire premises, facility, landing site or other place including storage areas; and
- (ii) any fish or fish product, fishing gear, equipment or records;
- (d) fail, refuse or neglect to immediately and fully comply with every lawful instructions or directions given by an authorized person;
- (e) deny a request by an authorized person made in the course of exercising his duties and powers under this Act, including requests for access to records, documents, areas, gear and navigation and communication equipment, and that the equipment be turned on for his or her use;
- (f) when lawfully required to state his name, date of birth and place of abode to an authorized person fail or refuse to do so, or state a false name, date of birth or place of abode to the authorized person;
- (g) when lawfully required by an authorized person to give information, give information which is false, incorrect or misleading in any material respect;
- (h) resist lawful arrest for any act prohibited by this Act:
- (i) aid, incite or encourage another person to assault, resist, intimidate or obstruct an authorized person who is carrying out his/her duties or exercising his powers under this Act, or any person lawfully acting under a authorized officer's instructions or in his/her aid;
- (j) interfere with, delay or prevent by any means, the apprehension or arrest of another person having reasonable grounds to believe that such person has committed an act in contravention of this Act;
- (k) fail or refuse to allow an authorized person to carry out all duties safely, or to take all reasonable measures to ensure the safety of an authorized person as appropriate in the performance of his duties;

- (l) impersonate or falsely represent himself or herself to be an authorized officer, or to be a person lawfully acting under the Director-General's instructions or in his aid;
- (m) impersonate or falsely represent himself to be the master or an officer, or not to be the master or an officer, of a fishing vessel;
- (n) where the vessel is seized by an authorized person, fail to sail such vessel to a place in Kenya designated by the authorized officer or fail to ensure the safety of all those on board;
- (o) bribe or attempt to bribe an authorized person;
- (p) interfere with an authorized person in the performance of his duties; or in any other way obstruct or hinder an authorized person in the exercise of his powers, duties or functions under this Act;
- (q) use abusive or threatening language or insulting gestures or behave in a threatening or insulting manner towards an authorized person who is carrying out his duties or exercising his/her powers under this Act, or towards any person lawfully acting under the authorized officer's instructions or in his aid; or
- (r) obstruct, resist, delay, refuse boarding to, intimidate, or kidnap an authorized person who is performing his duties or exercising his powers under this Act, or any person lawfully acting under a authorized officer's instructions or in his aid; or
- (s) breach any other duty to an authorized person as required under this Act
- (3) A person who contravenes subsection (2) commits an offence and shall be liable on conviction to a fine not less than fifty million shillings or to a term of imprisonment not exceeding ten years or to both, and in addition the applicable licence may be suspended or cancelled.

Requirements for vessel monitoring systems

157. (1) The Director-General may establish and operate vessel monitoring systems for purposes of

Vessel Monitoring Systems. monitoring, control and surveillance, and managing the operations of fishing vessels under this Act.

- (2) The Director-General may require the operator of any fishing vessel, as a condition of licence or otherwise, to install, maintain and operate in accordance with such conditions as may be prescribed and such other conditions that may be required by the Director-General, a mobile transceiver unit or other device or equipment that is an integral component of a vessel monitoring system at all times while the fishing vessel is in the fishery waters or, in respect of a Kenya fishing vessel, in areas beyond national jurisdiction or such other area as may be prescribed or agreed in an international agreement or international conservation and management measures.
- (3) The operator of each fishing vessel shall comply with all licence conditions and requirements imposed pursuant to subsection (2) and shall, where the mobile transceiver unit or other device or equipment ceases to operate, immediately-
 - (a) notify the Director-General when the mobile transceiver unit or other device ceases to operate in accordance with such requirements; and
 - (b) cause the vessel to cease fishing except as otherwise authorized by the Director-General.
- (4) Where the mobile transceiver unit or other device ceases to operate as required, the operator shall immediately notify the Director-General and submit to him a report of the vessel's name, call sign, position expressed in latitude and longitudes to the minutes of arc and the date and time of the report at intervals of four hours or such other period as the Director-General may notify the operator, and—
 - (a) cause the vessel to cease fishing except as otherwise authorized by the Director-General; or
 - (b) cause the vessel to immediately return to the port of Mombasa, Lamu and Shimoni.
- (5) The operator shall comply with such other conditions that may be prescribed and such additional conditions that may be required by the Director-General, including:

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 - (a) the type of vessel monitoring system equipment to be used:
 - (b) installation procedures;
 - (c) operational requirements;
 - (d) information requirements;
 - (e) confidentiality; and
 - (f) reports.
 - (6) No person shall-
 - (a) without lawful excuse render inoperative or otherwise interfere with a mobile transceiver unit or other device installed pursuant to this Act so that it fails to operate accurately or in accordance with any prescribed conditions;
 - (b) whether within, or in areas beyond, national jurisdiction, intentionally, recklessly or negligently destroy, damage, render inoperative or otherwise interfere with any part of mobile transceiver unit or vessel monitoring system aboard a vessel licensed pursuant to this Act, or intentionally feed or input into that system information or data which is not officially required or is meaningless; or
 - (c) intentionally, recklessly or negligently divulge information or data obtained from a vessel monitoring system or a system of reporting or recording required or permitted under this Act, other than in the course of duty and to a person or persons entitled to receive that information or data.
- (7) A person who contravenes the provisions of this section commits an offence and shall be liable on conviction to a fine not less than ten million shillings or to imprisonment for a term less than ten years or to both, and in addition the applicable licence may be suspended or cancelled.

Requirements for use of ports

158. (1) No foreign fishing vessel shall use a port in Kenya for landing, transhipping, packaging, or processing

Use of port without authorization prohibited.

of fish or for other port services including, inter alia. refuelling and resupplying, maintenance and dry docking. unless —

- (a) the port has been designated for use by foreign fishing vessels:
- (b) the operator has given at least forty-eight hours' advance notice or such other notice as may be prescribed or required by the Director-General;
- (c) the operator has provided to the Director-General such information as may be prescribed or required;
- (d) in the case of a foreign fishing vessel, a written authorization for the use of such port has been issued by the Director-General; and
- (e) where the Director-General has authorized entry of such vessel into port, the master of the vessel or, in the case of a foreign fishing vessel, the vessel's representative presents the authorization for entry into the port to an authorized officer or other competent officer upon the vessel's arrival at port.
- (2) The operator, master and charterer of a vessel which contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding one million shillings or to a term of imprisonment not exceeding five years or to both.
- 159. (1) Authorization to enter a port shall be denied where there is sufficient proof that a vessel seeking entry into port has engaged in illegal, unreported and unregulated fishing, or in fishing-related activities in support of illegal, unreported and unregulated fishing, or appears on a list of vessels which have engaged in such fishing or fishing related activities adopted by a regional fisheries management organization in which Kenya is a member or cooperating non-member, in accordance with the rules and procedures of such organization and in conformity with international law.
- (2) Without prejudice to subsection (1), authorization for a vessel to enter a port may be given exclusively for the purpose of inspecting it and taking other appropriate

Vessels may be prohibited from entering port.

actions in conformity with international law which are at least as effective as denial of port entry in preventing, deterring or eliminating illegal, unreported and unregulated fishing and fishing-related activities in support of illegal, unreported and unregulated fishing.

- (3) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not less than fifty million shillings or to imprisonment for a term not less than ten years or to both.
- 160. (1) Where a foreign fishing vessel has entered one of its ports, the Director-General shall deny that vessel the use of the port for the landing, transhipping, packaging or processing of fish which have not been previously landed, or for refuelling, resupplying, maintenance, drydocking and other port services where—
 - (a) the vessel does not have a valid and applicable authorization to engage in fishing or fishing-related activities required by its flag State;
 - (b) the vessel has not been granted a valid and applicable licence to engage in fishing or fishing related activities required under this Act;
 - (c) there is clear evidence that the fish on board was taken in contravention of applicable requirements of any coastal State in respect of areas under the national jurisdiction of that coastal State;
 - (d) the flag State of any foreign fishing vessel does not confirm within a reasonable period of time on the request of the Director-General that the fish on board was taken in accordance with applicable requirements of a relevant regional fisheries management organization; or
 - (e) there are reasonable grounds to believe that the vessel was otherwise engaged in illegal, unreported or unregulated fishing or fishingrelated activities in support thereof unless the operator of the vessel can establish-
 - (i) that it was acting in a manner consistent with relevant conservation and management measures; or
 - (ii) in the case of provision of personnel, fuel, gear and other supplies at sea, that the vessel that

Denial of the use of port to a foreign fishing vessel.

- was provisioned was not at the time of provisioning a vessel referred to in subparagraph (e);
- (2) Notwithstanding subsection (1), a vessel shall not be denied the use of port services essential to the safety and health of the crew and the safety of the vessel, provided these needs are duly proven, or, where appropriate, for the scrapping of the vessel.
- (3) The operator of a vessel which uses a port where such use has been denied pursuant to subsection (1) commits an offence and shall be liable on conviction to a fine not less than fifty million shillings or to imprisonment for a term not less than ten years or to both.
- (4) Any person who, knowing or having reasonable cause to believe which a vessel has been denied the use of port, takes any action in assisting such vessel to use the port, or to provide it with goods or services which have been denied, commits an offence and shall be liable on conviction to a fine not exceeding two million shillings or to imprisonment for a term not exceeding ten years or to both.
- 161. (1) In carrying out inspections of fishing vessels in port, authorized officers shall follow such procedures as may be prescribed or the Director-General may require to the extent possible, and-

Inspection of foreign fishing vessels in port.

- (a) present to the master of the vessel an identification document prior to an inspection;
- (b) in case of appropriate arrangements with the flag State of a foreign fishing vessel, invite that State to participate in the inspection;
- (c) not interfere with the ability of the master of a foreign fishing vessel, in conformity with international law, to communicate with the authorities of the flag State;
- (d) make all possible efforts to-
 - (i) avoid unduly delaying the vessel to minimize interference and inconvenience, including any unnecessary presence of authorized officers on board, and to avoid action that would adversely affect the quality of the fish on board;

- (ii) facilitate communication with the master or senior crew members of the vessel; and
- (e) ensure that inspections are conducted in a fair, transparent and non-discriminatory manner and would not constitute harassment of any vessel.
- (2) A report of the inspection shall promptly be provided to the Director-General in such form as may be prescribed or as the Director-General may require.

PART XIV — REQUIREMENTS FOR ARRESTED PERSONS AND SEIZED ITEMS

162. (1) In cases of arrest or detention of foreign fishing vessels for a contravention of this Act, the Director-General shall promptly notify the flag State, through appropriate channels, of the action taken and of any penalties subsequently imposed.

Arrest or detention and release of foreign fishing vessels, crew members.

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- (2) Any foreign fishing vessel and its crew arrested for the contravention of any provision of this Act that governs any act of fishing or fishing-related activity shall be promptly released upon the posting of a reasonable bond or other security.
- (3) In the absence of any agreement to the contrary with the State of which the vessel or its crew are nationals, penalties for violations of this Act in the Kenya Exclusive Economic Zone shall not include imprisonment or any form of corporal punishment.
- 163. (1) A person arrested under this Act shall promptly be brought before the Court of applicable jurisdiction or be subject to administrative proceedings in accordance with this Act.

Prompt judicial or administrative proceedings for arrested persons.

- (2) Where a person is released without being charged or where prosecution is not instituted within thirty days after a person is charged, all items seized shall be returned to the person.
- (3) Where a person does not appear to answer a charge within ninety days after her arrest, any item seized from that person shall be forfeited to the State.
- 164. If the master of a fishing vessel is granted bail for an offence under this Act, the court granting bail may, if it thinks it necessary or desirable in the circumstances of the

Conditions for bail.

case, impose a condition whereby, pending the conclusion of the case, the accused is denied access to the vessel or is allowed access only on conditions determined by the Court.

- **165.** (1) Any item seized pursuant to this Act shall be delivered into the custody of the Director-General.
- Delivery and notice for seized items.
- (2) A written notice shall be given to the person from whom any article or item was seized or to any other person whom the fisheries inspector believes is the owner or person otherwise entitled to possession of the article or item seized and the grounds for such seizure shall be stated in the receipt.
- 166. (1) Any fish or fish products seized by an authorized officer under this Act may, at the direction of the Director-General, be sold and the proceeds of the sale held and dealt with pursuant to this Act.

Disposal of perishable items.

- (2) If any fish or other thing of a perishable nature is seized under this Act, the Director-General may, notwithstanding any other provision of this Act—
 - (a) return the fish or other thing to the person from whom it was seized on receiving adequate cash security equivalent to the value of the fish or thing; or
 - (b) cause the sale of the fish or other thing at a price which is reasonable in the circumstances, and, if court proceedings are instituted, pay the proceeds of the sale into a suspense account of the Service pending a court order in respect of the forfeiture of the proceeds or, if no proceedings are instituted, release the proceeds to the person from whom the fish or other thing was seized:

Provided that if, after making all reasonable efforts, the Director-General is unable to sell the fish or other thing, or where such fish or other things are unfit for sale, he may dispose of the same in such other manner as he deems fit, including by destruction.

- (3) Where any fish or fish products are sold or otherwise disposed of pursuant to this section, the fisheries inspector shall—
 - (a) give the person from whom such fish or perishable goods was seized a receipt stating the date on

which the goods were sold or otherwise disposed of, the quantity of such goods, and in the case of a sale, the amount realized; and

- (b) pay the proceeds of sale into Court.
- (4) The proceeds of any sale under subsection (3) shall be dealt with by the Court according to law.
- 167. (1) Upon seizure of a vessel, vehicle, aircraft or other item, reasonable efforts shall be made to notify the owner or owners of the property seized or detained pursuant to this Act of the seizure or detention of that property.

Notice of detainment or seizure of property.

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- (2) A notice under the section shall-
- (a) enumerate the reasons for the seizure and/or detention;
- (b) describe the steps required for reclamation of the seized and or detained property; and
- (c) make the owner or owners aware of any deadlines and potential forfeiture of property pursuant to this Act.
- 168. (1) If any vessel, vehicle, aircraft or item has been seized pursuant to this Act, and a person who has been properly charged with an offence in relation thereto fails to appear to answer the charge within ninety days of the service or attempted service of notice pursuant to this Act, the Director may apply for the items to be forfeited to the State and the Court shall make such order as it shall deem fit.
- (2) If the lawful owner of a vessel, vehicle, aircraft or item seized pursuant to this Act cannot be traced within ninety days of the service or attempted service of notice pursuant to this Act, the seized item shall be forfeited to the State.
- (3) If the owner of a vessel, vehicle, aircraft or thing or the person having the possession, care or control of it at the time of its seizure or detention is convicted of an offence in terms of this Act and a fine is imposed, the vessel, vehicle aircraft or thing may be detained until all fines, orders for costs and penalties imposed in terms of this Act are paid.

Treatment of items detained or seized.

- Release of seized goods.
- **169.** (1) The Court may, on application, order the release of any fishing vessel, vehicle, aircraft or other item seized under this Act on receipt of such bond or other form of security as it may determine.
- (2) In determining the value of the bond or other form of security in respect of a foreign fishing vessel or a fishing vessel which is not a Kenyan fishing vessel, the Court shall have regard to—
 - (a) the aggregate amount of the fair market value of the property to be released;
 - (b) an estimated total fine or other penalty provided for the offence or offences charged or likely to be charged;
 - (c) the costs the prosecution would be likely to recover if a conviction were entered;
 - (d) and any damages and costs assessed as a consequence of the offence or offences charged or likely to be charged, and may set the value at such aggregate amount.
- (3) Notwithstanding the provisions of subsection (2), the amount determined by the Court under this Act shall not be less than the fair market value of the property to be released or the aggregate minimum fine or penalty for each offence charged, whichever is greater.
- (4) Where any vessel, vehicle, aircraft or other item seized is released upon the lodging of a bond or other form of security under subsection (1), the Court shall in the order state separately the sums which are attributable to the property to be released, the total fine or fines and the likely costs.
- (5) The release of any bond or other form of security under this Act shall be conditional upon-
 - (a) a finding by the Court that the vessel, vehicle, aircraft or other item has not been used in or in connected with in the commission of an offence under this Act; or
 - (b) where the Court finds that the vessel, vehicle, aircraft or other item has been used in or in connection with the commission of an offence under this Act—

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- (i) payment in full within thirty days of the judgment of the Court of any fine imposed by the Court and any costs ordered to be paid by the Court; and
- (ii) where the Court so orders, delivery to the Court of the vessel, including its fishing gear, furniture, appurtenances, stores and cargo, and of any fish ordered to be forfeited without any impairment of their value, or payment of the monetary value thereof as determined by the Court.
- (6) Nothing in subsection (1) shall require a Court to release any vessel, vehicle, aircraft or other item if it may be required as an exhibit in court proceedings or is reasonably required for any further investigations of offences against this Act.
- 170. Any bond, security or net proceeds of sale held in respect of any vessel, vehicle, aircraft or other item shall be applied as follows—

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- (a) the discharge of any forfeiture ordered under this Act; and
- (b) the payment of all fines or penalties for offences under this Act or penalties imposed under this Act arising out of the use of or in connection with the vessel, vehicle, aircraft or other item.
- 171. (1) No person shall remove a vessel, vehicle, aircraft or other item held under this Act and which is in the custody of the Government whether or not the person knew that the vessel, vehicle, aircraft or other item was held in the custody of the Government.
- (2) Where any vessel, vehicle, aircraft or other item held or forfeited under this Act has been unlawfully removed from the custody of the Government, the vessel, vehicle, aircraft or other item shall be liable to seizure anywhere at any time within the jurisdiction of Kenya.
- (3) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding five thousand shillings or to a term of imprisonment not exceeding five years or to both.

Unlawful removal of seized goods.

Application of bond,

172. The State shall not be liable to any person for any loss, damage to or deterioration in the condition of any vessel, vehicle, aircraft or other item while in the custody of the State pursuant to this Act, provided that the State takes reasonable care given the circumstances.

Liability for loss, damage or deterioration of things in custody.

PART XV – EVIDENCE

173. The Director-General or any person designated in writing by him may give a certificate stating that-

Certificate evidence

- (a) a specified vessel was or was not on a specified date or dates a Kenyan fishing vessel or a foreign fishing vessel;
- (b) a person was or was not on a specified date or dates the holder of any specified license, authorization or registration;
- (c) a specified fishing vessel was not on a specified date or dates the subject to a specified license, authorization or registration;
- (d) an appended document is a true copy of the licence or certificate of registration for a specified vessel or person and that specified conditions were attached to such document:
- (e) a particular location or area of water was on a specified date or dates within the Kenya fishery waters or a closed, limited, restricted or in any other way controlled area of the Kenya fishery waters, or an area of the Kenya fishery waters subject to specified conditions;
- (f) an appended chart shows the boundaries on a specified date or dates of the Kenya fishery waters, territorial sea, closed or limited areas or other areas or zones delineated for any specified purpose;
- (g) a particular item or piece of equipment is fishing gear;
- (h) the cause and manner of death of or injury to any fish;
- (i) an appended document is a true copy of an approved charter agreement or an access agreement;

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 - (j) a call sign, name, or number is that of or allotted to a particular vessel under any system of naming or numbering of vessels;
 - (k) an appended position or catch report was given for a specified vessel;
 - (l)a specified fishing vessel is included on a list of illegal, unreported and unregulated fishing vessels or authorized fishing vessels established by a regional fisheries management organization or pursuant to an international agreement; or
 - (m) a certificate as to the condition of fish given under this Act was made in accordance with this Act and was made by the person who is signatory to the certificate.
- 174. (1) Unless the contrary is proved, a document purporting to be a certificate issued under section 175 shall be deemed to be such a certificate and to have been duly issued.

Validity and procedure for certificate.

- (2) Where a certificate is served on a defendant seven or more days before its production in court in any proceedings under this Act, the certificate shall, unless the contrary is proved, be sufficient evidence of all the facts averred in it.
- (3) Where a certificate is served upon a defendant fourteen or more days before its production in court and the defendant does not, within seven days of the date of service, serve notice of objection in writing on the prosecutor, then the certificate shall, unless the Court finds the defendant is unduly prejudiced by any failure to object, be conclusive proof of all the facts averred in it.
- (4) Where any objection is notified under subsection (3) the certificate shall, unless the contrary is proved, be sufficient evidence of all the facts averred in it.
- (5) Any certificate shall be titled "Certificate made under section 175, Fisheries Management and Development Act" and no such certificate may be used as conclusive proof of the facts averred therein unless it is served with a copy of sections 175 and 177 of this Act.
- (6) Any omission from or mistake made in any certificate issued under section 175 shall not render it

invalid unless the Court considers such omission or mistake is material to any issue in the proceedings concerned, or the defendant is unduly prejudiced by it.

- (7) Where in any proceedings a certificate made under section 175 is produced to the Court, the prosecution shall not be obliged to call the maker of the certificate and the Court shall, where material, rely on the facts therein unless the contrary is proved.
- (8) In this section "certificate" means a certificate issued under section 175.
- 175. (1) Where in any proceedings under this Act the place or area in which a vessel is alleged to have been at a particular date and time or during a particular period of time is material to an offence committed, then a place or area stated in a certificate by an authorized officer shall be evidence, unless the contrary is proved, of the place or area in which the vessel was at the date and time or during the period of time stated.
- (2) An authorized officer shall in a certificate made under subsection (1) state—
 - (a) his name, address, official position, country of appointment and provision under which he is appointed;
 - (b) the name, if known, and call sign of the fishing vessel concerned;
 - (c) the date and time or period of time the vessel was in the place or area;
 - (d) the place or area in which it is alleged the vessel was located;
 - (e) the position fixing instruments used to fix the place or area stated in paragraph (d) and their accuracy within specified limits;
 - (f) a declaration that the authorized officer checked the position-fixing instruments a reasonable time before and after they were used to fix the position and they appeared to be working correctly; and
 - (g) where a position fixing instrument which is not judicially noticed as being accurate or a designated machine is used, a declaration that he

Certificate as to the location of a vessel.

- checked the instrument as soon as possible after the time concerned against such instrument.
- (3) Section 172 shall apply to a certificate given under this section as if it had been a certificate issued under section 146.
- (4) For the purposes of this section "authorized officer" shall include surveillance officers and those charged with similar responsibilities in other countries.
- 176. (1) The readings of any mobile transceiver unit or other electronic location device integral to a vessel monitoring system shall be admissible as evidence and may be used as *prima facie* evidence of the facts that they aver.
- (2) The readings of the devices referred to in subsection (1) may be made from a printout or as observed from a visual display unit.
- (3) Any electronic location device shall be required to be capable either wholly or partially in itself of producing the readings concerned and not merely be a receiver of information or data.
- 177. (1) Where a photograph is taken of any fishing or fishing related activity and the date and time on and position from which the photograph is taken are simultaneously superimposed upon the photograph, the date and time shall be *prima facie* evidence that the photograph was taken on the date, at the time and in the position so appearing.
- (2) The provisions of this section shall apply only when—
 - (a) the camera taking the photograph is connected directly to the instruments which provide the date, time and position concerned; and
 - (b) the instruments which provide the date, time and position are commonly recognised as being accurate or are designated machines or were checked as soon as possible after the taking of the photograph against such instruments.
- (3) The provisions of this section shall not affect the admissibility of photographic evidence in any way.
- 178. (1) All fish found on board any fishing vessel which has been used in the commission of an offence under

Electronic location

Photographic evidence

Presumptions.

this Act shall unless the contrary is proved, be presumed to have been caught during the commission of that offence.

- (2) All fish found on board any fishing vessel in respect of which false or misleading information or no information has been provided prior to the vessel's entry into port as required pursuant to this Act, shall unless the contrary is proved, be presumed to have been caught during the commission of an offence or during illegal, unreported or unregulated fishing activities.
- (3) Where, in any legal proceedings under this Act, the place in which an event is alleged to have taken place is in issue, the place stated in the relevant entry in the logbook or other official record of any enforcement vessel or aircraft as being the place in which the event took place shall be presumed to be the place in which the event took place.
- (4) The production of a written copy or extract of the entry certified by a fisheries inspector as a true copy of the accurate extract shall be *prima facie* evidence of an entry in a logbook or other official record of an enforcement vessel or aircraft.
- (5) Where in any legal proceedings relating to an offence under this Act—
 - (a) an authorized officer gives evidence of reasonable grounds to believe any fish to which the charge relates were taken in a specified area of the fishery waters or taken by the use of illegal gear, and
 - (b) the Court considers that, having regard to that evidence the grounds are reasonable,

all the fish shall be presumed to have been so taken, unless the contrary is proved.

- (6) Where any information is given for a fishing vessel under this Act or an access agreement in relation to any fishing activity of a fishing vessel, it shall be presumed to have been given by the master, owner or charterer of the vessel concerned, unless it is proved it was not given or authorized to be given by any of them.
- (7) Any entry in writing or other mark in or on any log, chart or other document required to be maintained under this Act or used to record the activities of a fishing

vessel shall be deemed to be that of the master, owner and charterer of the vessel, unless proven otherwise.

- (8) Any position fixing instrument on board a vessel or aircraft used for the enforcement of this Act shall be presumed to be accurate.
- (9) For the purposes of subsection (6), a position fixing instrument shall be deemed to be any device which indicates the location of a vessel, including but not limited to any global positioning system.
- (10) The readings from any vessel monitoring, communications or navigation equipment required under this Act, either made from a printout or observed from a visual display unit, and which are capable either wholly or partly of producing the readings concerned and are not merely receivers of information or data, when checked for correct working and read by a competent operator, shall, unless the contrary is proved, be presumed to give accurate readings within the manufacturers specified limits.
- (11) Unless the contrary is proved, any person who is found in possession of any illegal fishing gear, including explosives, poison or any device capable of producing an electric shock on or near the fishery waters shall be presumed to be undertaking an unlawful activity contrary to this Act.
- 179. (1) Where, in proceedings under this Act, a person is charged with having committed an offence involving an act for which a license, authorization or other permission is required, the onus shall be on that person to prove that at the relevant time, the requisite license or authorization or other permission was held by that person.
- (2) Where a person is charged with the contravention of section 127, the onus shall be on that person to prove that his entry into the fishery waters was for a purpose recognized by international law.
- (3) Where a person is charged with the contravention of section 80, the onus shall be on that person to prove that the information given was true, complete and correct.
- **180.** (1) No person shall, being on board any vessel being pursued, about to be boarded or notified that it shall be boarded by an authorized officer, whether in the Kenya

Interference with evidence and

avoidance of

Onus of proof.

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fishery waters or beyond areas under national jurisdiction, who throws overboard or destroys any fish, equipment, document, explosive, noxious substance or other item with intent to avoid its seizure or the detection of any offence against this Act.

- (2) No person shall destroy or abandon any fish, fishing gear, net or any other fishing appliance, electric shock device, explosive, poison or any other noxious substance, or any other thing with intent to avoid their seizure or the detection of an offence against this Act.
- (3) No person shall remove from legal custody any vessel, fish, equipment or other item, or do any act or omission by which a vessel, fish, equipment or other item held in legal custody may be so removed, whether or not he knew that the vessel, fish, equipment and other item was being held in custody.
- (4) No person shall intentionally, recklessly or negligently destroy, damage, render inoperative or otherwise interfere with any premises or licensed aquaculture establishment.
- (5) A person who contravenes the provisions of this section commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding five years or to both.
- 181. (1) No person shall tamper with any item, document or thing that may be used in evidence of non-compliance with this Act, including evidence relating to the catching, loading, landing, handling, transhipping, transporting, processing, possession, aquaculture and disposal of fish.
- (2) A person who contravenes subsection (1) commits an offence and shall be liable on conviction to a fine not exceeding five hundred thousand shillings or to a term of imprisonment not exceeding five years or to both.

PART XVI —SUMMARY ADMINISTRATIVE PROCEEDINGS

182. (1) The Director-General may, after consultation with the Cabinet Secretary and the written consent of the Attorney- General, proceed administratively against any person who has been charged with a contravention of this Act.

Tampering with item, etc. that may be used in evidence of non-compliance with the Act.

Decision to proceed administratively.

- (2) The Director-General shall promptly notify the person charged that the person may, within twenty four hours of receiving such notification, consent to the compounding of the offence under this section
- (3) An offence small be compounded under this section where the person charged, admits in writing to the offence; and—
 - (a) consent to compounding proceed after being fully informed about these proceedings.
- (4) Where a person consents to the compounding of an offence, the person shall—
 - (a) not engage in any activity within the scope of this Act until the penalty has been paid in full; and
 - (b) be deemed to have consented to any seizure in accordance with this Act in relation to the offence, and to have waived any right to a hearing in the judicial process.
- (5) Upon receiving the written consent under subsection (4), the Director-General or his designee may handle the matter in accordance with this Part, in consultation with the Director-General of Public Prosecutions.
- (6) Where the person fails to respond to the Director-General's written notice within twenty-four hours, the Director-General shall refer the matter to prosecution.
- 183. (1) The Director-General may, where the person charged has fulfilled the conditions of section 182 (4), dispose of such violation by causing a compounding agreement to be drawn up by the Director of Public Prosecutions to formalise the terms and conditions for the Director-General to accept on behalf of the Government from such person an administrative penalty, the amount of which shall—
 - (a) not exceed the maximum fine or penalty prescribed under this Act, for the offence being compounded, in addition to the fair market value of any fish caught illegally;
 - (b) not be less than the minimum level of fine calculated in conformity with the guidelines required pursuant to section 189; and

Summary administrative proceedings.

- (c) where the person charged has committed the same or a similar offence in the past, an amount not less than the fine previously set plus an additional ten per cent.
- (2) The compounding of an offence under this section shall be binding on the payment of the penalty and the notification in writing upon payment, under the signature of both parties, to the appropriate Court.
- (3) The compounding procedure shall be null and void if the full amount of the penalty as determined under subsection (1) is not paid within three working days of the notification of the assessment of the penalty assessment to the person charged and the matter shall immediately be referred to the Court.
- (4) When the penalty is paid in full under this section, the Director-General may order the release of any article, items, fish or fish products seized under this Act or proceeds of sale of such items, fish or fish products on such conditions as he or she may determine.
- (5) Where the person is unable to pay the determination in full, that person may enter into an agreement for payment in instalments with the Director-General and Attorney General.
- (6) In any proceedings brought against any person for an offence against this Act, it shall be a defence if such person proves that the offence for which he is charged has been compounded under this section.
- (7) The Director-General may confiscate any fishing gear or other appliance used for illegal fishing connected with the vessel.
- (8) Any person aggrieved by a decision of the Director-General under this section may appeal to the High Court within thirty days of the Director-General's decision.

PART XVII — JURISDICTION, PROSECUTION, FORFEITURE, LIABILITIES AND OTHER ACTIONS

184. (1) Any act or omission in contravention of any provision of this Act committed—

Jurisdiction of the

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- (a) by a person or in respect of a vessel within the Kenya fishery waters;
- (b) outside the Kenya fishery waters by any Kenya citizen, or in respect of a vessel or by person ordinarily resident in Kenya;
- (c) outside the Kenya fishery waters by any person or vessel in contravention of section 104; or
- (d) by any person on board any Kenya fishing vessel, shall be dealt with in a court determined by the Chief Justice, but where a foreign fishing vessel is involved, the matter shall be dealt with by the High Court and the judicial proceedings shall be taken as if the act or omission had taken place within the of Kenyan fishery waters.
- (2) Where an authorized officer is exercising any powers conferred on him outside the Kenya fishery waters in accordance with this Act, any act or omission of any person in contravention of a provision of this Act shall be deemed to have been committed within the Kenya fishery waters.
- (3) Notwithstanding any provision of any other law, an information or charge in respect of any offence against this Act may be laid at any time within one year of the commission of the offence.
- 185. Any authorized officer may, subject to the direction of the Director of Public Prosecutions, conduct any prosecution for any offence under this Act or the regulations made thereunder, and shall for that purpose have all the powers conferred upon a public prosecutor by the Criminal Procedure Code.
- **186.** (1) Where a court convicts a person of an offence against this Act, or such other offences as may be prescribed for the purposes of this subsection, the Court may order the forfeiture of any of the following—
 - (a) any fish, fish product, fishing vessel (including its gear, furniture, appurtenances, stores, cargo and aircraft), vehicle, aircraft, gear, equipment, explosive or noxious substance taken, used or otherwise involved in the commission of the offence;

Conduct of prosecutions.

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Forfeiture.

- (b) where a fishing vessel, vehicle or aircraft was used in the commission of an offence, any fish on board such vessel, vehicle or aircraft at the time of the offence:
- (c) where a storage facility was used in the commission of the offence, any fish or fish products in the facility at the time of the commission of the offence; or
- (d) where any fish has been sold under section 166, the proceeds of the sale of the fish.
- (2) Where a court convicts a person of an offence against this Act, or such other offences as may be prescribed for the purposes of this subsection, in the commission of which a foreign fishing vessel was used or was otherwise involved, the Court may order the forfeiture of—
 - (a) the fishing vessel;
 - (b) any gear and other equipment that was on the vessel concerned at the time of the offence; and
 - (c) all fish or fish products on board the vessel at the time of the offence, or where the fish products have been sold, the proceeds of sale.
- **187.** (1) Any vessel or other property or security forfeited under this Act becomes the property of the State.

Disposition of forfeited property.

- (2) Any vessel or other property forfeited under this Act may be—
 - (a) retained;
 - (b) leased; or
 - (c) sold by the State by tender or by agreement approved by the Director-General and endorsed by the Cabinet Secretary,

Provided that if such forfeited property is sold by the State, the owner or apparent owner prior to forfeiture shall be afforded a reasonable opportunity to bid on or purchase such property.

(3) The Director-General or any person acting on his behalf shall not be liable in any way of any costs incurred or damages sustained as of a decision taken under subsection (2).

Deprivation of monetary benefits.

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- 188. (1) A Court convicting a person of an offence under this Act may summarily and without pleadings inquire into the pecuniary benefit acquired or saved by the person as a result of the commission of the offence, and may, upon reliable expert evidence otherwise admissible in a court of law and in addition to any other penalty imposed, impose a fine equal to the Court's estimation of that pecuniary benefit, despite any maximum penalty elsewhere provided.
- (2) The Court shall, in imposing a fine pursuant to subsection (1), report fully in writing on details of the expert evidence upon which its judgment was based.
- 189. (1) The operator and charterer of a vessel shall jointly and severally bear the cost or expenditure incurred by the Government, upon application by the State and as determined by the Court upon conviction, in connection with—
 - (a) the seizure of a fishing vessel, vehicle or aircraft or other an offence against this Act, including any relevant costs of pursuit of the vessel, vehicle or aircraft;
 - (b) the prosecution for an offence in accordance with this Act; and
 - (c) the repatriation of the master or crew of any vessel seized under this Act.
- (2) The amount of any costs or expenditure by the Court under subsection (1) may be recovered in the same manner as a fine and shall be imposed in addition to any fine or penalty that may be ordered by the Court.
- (3) Nothing in subsection (1) shall be deemed to allow for the recovery of any cost or expenditure that has already been recovered pursuant to any other order made under this Act.
- (4) If it intends to apply for pursuit costs in accordance with subsection (1), the Government shall, fourteen (14) days prior to a trial related to the offence, serve the defendant with written details of those costs.
- 190. All pecuniary penalties not specifically designated as fines and all forfeitures incurred under or imposed pursuant to this Act, and the liability to forfeiture

Liability for nonpayment of pecuniary penalties

Costs incurred by

of any article seized under the authority thereof, and all rents, charges, expenses and duties and all other sums of money payable under this Act may be sued for, determined, enforced and recovered by suit or other appropriate civil proceedings in a court of competent jurisdiction in the name of the State as the nominal plaintiff.

- 191. (1) A person who commits an offence against this Act shall, upon conviction, be liable for any loss or damage caused by the offence and the amount of the loss of such damage may be awarded by the Court as restitution in addition to, and recovered in the same manner as a fine.
- (2) The loss or any damage caused by the offence referred to in subsection (1) shall include, as may be applicable, any costs incurred in—
 - (a) detecting, apprehending, investigating or prosecuting the offence; and
 - (b) detaining or seizing any property, fish, article or thing in respect of that offence.
- 192. (1) Subject to subsection (2), in this section, each officer of a partnership, corporation, firm, company or any other business enterprise engaged in activities governed by this Act shall be personally liable for any violation of or offence committed under this title by any member or employee.
- (2) It shall be a defence to liability under this section for the officer referred to in subsection (1) to prove that he or she used due diligence to secure compliance with this Act or that the violation or offence was committed without that officer's knowledge, consent, collusion or collaboration.
- 193. In any proceedings under this Act, the act or omission of a crew member of a fishing vessel or in association with a fishing vessel shall unless otherwise expressly provided, be deemed to be that of the operator of the vessel.
- 194. (1) Each day of a continuing offence shall be considered a separate offence.
- (2) Where the person charged has committed a similar offence in the past, a fine of an amount not less than that previously penalized plus an additional ten percent shall be charged.

Liability for loss or damage.

Civil liability of officers of companies.

Liability of operators.

Continuing offences and repeat offenders. 195. Where a person has been convicted of an offence against this Act, the Court may in addition to any other penalty or forfeiture, order that for a period not exceeding five years that person be banned from going on or remaining aboard any fishing vessel in the Kenyan fishery waters.

Banning order.

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Citizen suits and

harmed by a violation of any provision of this Act or the accompanying regulations may bring a civil action in a court of competent jurisdiction against any responsible person, (except the Government and its employees).

196. A person who incurs loss or damage as a result of

Injunctions

197. A court of competent jurisdiction may issue an injunction to enforce any provision of this Act against any person including the Ministry.

PART XVIII—ESTABLISHMENT OF FISH MARKETING AUTHORITY

198. (1) There is established a body to be known as the Kenya Fish Marketing Authority.

Establishment of Fish Marketing Authority.

- (2) The Authority shall be a body corporate with perpetual succession and a common seal and shall, in its corporate name, be capable of—
 - (a) suing and being sued;
 - (b) taking, purchasing and disposing of movable and immovable property; and
 - (c) doing such other things necessary for the proper discharge of its functions under this Act, which may be lawfully done or performed by a body corporate.
- (3) The headquarters of the Fish Marketing Authority shall be in Nairobi.
- 199. The object and purpose of the Fish Marketing Authority shall be to market fish and fisheries products from Kenya.

Objects and

200. The functions of the Fish Marketing Authority shall be to—

Functions of the Fish Marketing Authority.

- (a) develop, implement and co-ordinate a national fish marketing strategy;
- (b) ensure that fish and fishery products from Kenya enjoy market access at local, national, regional

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- and international levels as premier products and, to this end, that the products and markets are developed and diversified;
- (c) promote the sustainable use of fish by preventing, deterring and eliminating to the extent possible trade in illegal, unreported and unregulated fishing;
- (d) enforce national fisheries trade laws and international fisheries related trade rules;
- (e) identify fish market needs and trends and advise fisheries stakeholders accordingly;
- (f) organize stakeholders to ensure smooth marketing of fish and fishery products;
- (g) collaborate with national and international trade related bodies;
- (h) advice the Cabinet Secretary on issues related to national and international trade trends; and
- (i) perform any other functions that are ancillary to the object and purpose for which the Fish Marketing Authority is established.

201. (1) There shall be a Board of Directors of the Fish Marketing Authority which shall consists of—

Board of Directors

- (a) a chairperson appointed by the President;
- (b) the Principal Secretary of the Ministry for the time being responsible for matters relating to fisheries or his representative;
- (c) the Principal Secretary of the ministry for the time being responsible for matters relating to finance or his representative;
- (d) The Principal Secretary for the time being responsible for matters related to Trade and Industry;
- (e) The Principal Secretary in the ministry for the time being responsible for planning and economic development, or his representative;
- (f) one person, who has knowledge and experience in matters relating to fisheries, nominated by the Council of Governors;

- (g) the Chief Executive Officer of the Fund;
- (h) the Chief Executive Officer of the Fish Marketing Authority, who shall be the secretary; and
- (i) four other members nominated or selected through a competitive process taking into consideration regional balance and gender parity and appointed by the Cabinet Secretary, of whom—
 - (i) two shall be nominated by the registered national fisheries associations; and
 - (ii) two shall be persons with knowledge or experience in matters relating to international fisheries, finance, business administration, law, marketing or a related discipline.
- (2) The names of persons proposed for appointment under subsection (1)(a) and (h) shall, before they are appointed, be laid before the National Assembly for approval.
- (3) The members of the Board of Directors shall be appointed at different times so that the respective expiry dates of their terms of office shall fall at different times.
- (4) The Board of Directors shall ensure the proper and effective performance of the functions of the Fish Marketing Authority.
- (5) The Board of Directors may enter into partnership with other body or organization within or outside Kenya as it may consider appropriate, in furtherance of the objects of the Fish Marketing Authority.
- (6) The members of the Board of Directors shall be paid remuneration and allowances determined by the Minister, in consultation with the Minister responsible for matters relating to finance.
- **202.** (1) A member of the Board of Directors appointed under section 201 (1) (a) and (f) shall hold office for a term of three years but shall be eligible for reappointment for one further term of three years.
- (2) A member of the Board of Directors, other than an *ex officio* member may, at any time, resign from office by giving notice, in writing, addressed to the appointing authority.

Tenure of office and vacation of office.

matter.

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- (3) A member of the Board of Directors, other than an *ex-officio* member, who is absent from three consecutive meetings of the Board of Directors without sufficient cause shall cease to be a member of the Board of Directors.
- (4) Where a member of the Board of Directors is, for sufficient cause, unable to act as a member, the Cabinet Secretary shall determine whether the inability would result in the declaration of a vacancy.
 - (5) Where there is a vacancy—
 - (a) under subsection (2) or (3) or section 35(2); or
 - (b) as a result of declaration under subsection (4); or
 - (c) by reason of the death of a member,

the Cabinet Secretary shall appoint another person in accordance with the provisions of section 201 (1) to fill that vacancy.

203. The conduct of the meetings of the Board of Directors shall be in accordance with the Third Schedule.

Conduct of meeting of the Authority.

204.(1) A member of the Board of Directors who has an interest in a matter for consideration by the Board of Directors shall disclose, in writing, the nature of that interest and shall be disqualified from participating in any deliberations of the Board of Directors relating to that

- (2) A member who fails to disclose interest in a matter in accordance with subsection (1) shall cease to be a member of the Board of Directors.
- 205. Subject to this Act, the Board of Directors may, by resolution either generally or in any particular case, delegate to any committee of the Board of Directors or to any member, officer, employee or agent of the Fish Marketing Authority, the exercise of any of the powers or, the performance of any of the functions or duties of the Board of Directors under this Act.
- 206. (1) The Cabinet Secretary shall, in consultation with the Board of Directors and subject to subsection (2), through a competitive process, appoint a person to be the Chief Executive Officer of the Fish Marketing Board.
- (2) A person shall not be qualified for appointment as the Chief Executive Officer under subsection (1) unless

Delegation of functions.

Appointment of chief executive and other staff.

that person has an advanced degree in marketing, business administration or related discipline and has at least ten years' experience at a senior management level in matters relating to Fisheries, marketing or other related sector.

- (3) The chief executive officer shall hold office for a term of three years and shall be eligible for re-appointment for one further term.
- (4) The Board of Directors may appoint such officers and other staff as may be necessary for the proper and effective performance of the functions of the Fish Marketing Authority.
- 207. (1) There shall be a general fund of the Fish Marketing Authority which shall vest in the Board of Directors and into which shall be paid—

Funds of the Fish Marketing Authority.

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- (a) monies appropriated by Parliament for the purposes of the Fish Marketing Authority;
- (b) monies that may accrue to or vest in the Fish Marketing Authority in the course of the performance of its functions under this Act or any other law and approved by Parliament;
- (c) monies provided to the Fish Marketing Authority from the Fund;
- (d) donations, grants and gifts made to the Fish Marketing Authority, and
- (e) monies from any other source approved by the Cabinet Secretary for the time being responsible for matters relating to finance.
- (2) There shall be paid out of the general fund of the Fish Marketing Authority any expenditure incurred by the Fish Marketing Authority in the exercise of its powers or the performance of its functions under this Act.
- (3) The Fish Marketing Authority may, subject to the approval of the Cabinet Secretary for the time being responsible for finance, invest funds not immediately required for its purposes.

PART XIX—MISCELLANEOUS

208. (1) The Cabinet Secretary may make regulations for the better carrying into effect of the provisions of this Act.

Regulations.

- (2) Without prejudice to the generality of subsection (1), the Cabinet Secretary may make regulations for any or all of the following purposes—
 - (a) prescribing the conditions to be fulfilled by foreign participation in fisheries, including conditions of licensing foreign fishing vessels;
 - (b) establishing the conditions of issue of, and procedures of application for, any licence or other authority under this Act or regulations thereunder, the form and the fees payable therefor;
 - (c) prescribing the conditions of issue of, and procedures of application for, any licence or other authority under this Act or regulations thereunder, the form and the fees payable therefor;
 - (d) regulating the handling, storage and processing of fish by prescribing methods of handling, storage and processing of fish;
 - (e) prescribing requirements for governing the safety and quality of fish, fish products and fish feed;
 - (f) providing for the management and control of fishing ports and fishing waters;
 - (g) the licensing of any person to engage in any form of fishing, or of handling, transporting, processing or selling of fish products;
 - (h) organizing and regulating the marketing and distribution of fish:
 - (i) providing for the registration of private marks to be used to distinguish the ownership of fishing gear;
 - (j) prohibiting or controlling the importation, exportation and introduction into Kenya of live fish of any kind or species;
 - (k) promoting and regulating or controlling the development of aquaculture establishments;
 - (1) controlling the exploitation of the Exclusive Economic Zone;
 - (m) development of recreational and ornamental fisheries and establishment of fishing camps;

- (n) providing for fishing by Kenyan ships in the high seas:
- (o) providing for the management and exploitation of inland, dam and riverine fisheries;
- (p) providing for the management and exploitation of coastal fisheries:
- (q) providing for control of the manufacture, importation, marketing and introduction in Kenya fishery waters of fishing gears;
- (r) prescribing the forms to be used for various matters under the act:
- (s) any other thing he may deem necessary for the promotion of fisheries in Kenya.

209. Where any conflict arises between the provisions of this Act and any other law in matters relating to fisheries, the provisions of this Act shall prevail.

Suprecession.

PART XX-REPEALS AND TRANSITIONAL

210. (1) The following Acts are repealed —

Repeals and transitional provisions.

(a) the Fisheries Act;

Cap 378

(b) the Trout Ordinance;

Cap.380

- (c) the Fisheries Protection Act;
- (2) Notwithstanding subsection (1), the following $c_{ap.\ 379}$ transitional provisions shall apply
 - (a) any licences or permits granted under those Acts and in force immediately before the commencement of this Act shall, with the approval of the Cabinet Secretary, be deemed to have been granted under the provisions of this Act, and shall remain in force until revoked in accordance with any terms in that regard set out in the licence, as the case may be, or renewed as a licence under this Act;
 - (b) all property, except such property as the Cabinet Secretary may determine, which immediately before the commencement of this Act was vested in the Government for the use of the Fisheries Department, shall with approval of the Cabinet

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- Secretary, and, upon the taking effect of a notice by the Cabinet Secretary published in the Gazette, and without further assurance, vest in the Service, subject to all interests, liabilities, charges, obligations and trusts affecting such property;
- (c) except as otherwise provided in paragraph (b) in relation to property, all contracts, debts, obligations and liabilities of the Government attributable to the Fisheries Department immediately before the commencement of this Act shall, with the approval of the Cabinet Secretary, remain vested in the Government and may be enforced by or against the Government;
- (d) all persons, being public officers, who, immediately before the commencement of this Act, are employed by the Government for the purposes of the activities of the Fisheries Department, shall at the commencement of this Act be, deemed to be on secondment to the Service in accordance with this Act, or their deemed secondment otherwise ceases in accordance with the terms of such secondment;
- (e) where, at the commencement of this Act, any penalty, other than dismissal, has been imposed on any employee of the Fisheries Department pursuant to disciplinary proceedings against such employee, and the penalty has not been or remains to be served by such employee, such employee shall, on his transfer to the Service, serve or continue to serve such penalty to its full term as if it had been imposed by the Service.

211. The Acts specified in the Fourth Schedule are amended in the manner specified in that Schedule.

Consequential amendments to other Acts.

;

FIRST SCHEDULE

s. 10(2)

STAFF OF THE SERVICE

PART A—FISHERIES OFFICERS

(a) Professional Cadre

Director-General of Fisheries

Director of Fisheries

Deputy Director of Fisheries

Senior Assistant Director of Fisheries

Assistant Director of Fisheries

Principal Fisheries Officer

Chief Fisheries Officer

Senior Fisheries Officer

Fisheries Officer I

(b) Technical Cadre

Principal Assistant Fisheries Officer

Chief Assistant Fisheries Officer

Senior Assistant Fisheries Officer

Assistant Fisheries Officer I

Assistant Fisheries Officer II

Assistant Fisheries Officer III

B-DISCIPLINED OFFICERS CADRE

- 1. Commandant
- 2. Deputy Commandant
- 3. Assistant Commandant
- 4. Senior Superintendent Fisheries Guard
- 5. Superintendent Fisheries Guard
- 6. Chief Inspector Fisheries Guard
- 7. Inspector Fisheries Guard
- 8. Sergeant Fisheries Guard
- 9. Corporal Fisheries Guard
- 10. Constable Fisheries Guard
- 11. Fisheries Guard Recruit

OATH OF ALLEGIANCE

Signature of Declarant
Personal Number:
Sworn /affirmed before me
On the

D- Provisions relating to the officers of the Service

- 1. (1) The officers of the Service shall, in the performance of the duties conferred upon them under this Act and any other written law, conform with any lawful instructions, directions or orders which may be given by the Director-General.
- (2) The Director-General may, with the consent of the Board, from time to time make and issue administrative orders to be called Service Standing Orders for the general control, direction and information of the officers of the Service.
- 2. (1) The Director-General shall, with the approval of the Board, issue a Disciplinary Code for Officers of the Service, which shall apply to the disciplined officers of the Service and which may provide for the following matters—
 - (a) the investigation of disciplinary offences and the hearing and determination of disciplinary proceedings;
 - (b) disciplinary penalties; and
 - (c) any other related matters.
- (2) The following disciplinary penalties, or any combination thereof, may be included in the Disciplinary Code for infringement of the Code issued under sub-paragraph (1)—
 - (a) dismissal from the Service;
 - (b) reduction in rank;
 - (c) confinement for not more than fourteen days in a guard room or restriction to the confines of any.

PART D—INTER-AGENCIES MCS UNITS (s21)

The Inter-agency Monitoring, Control and Surveillance Unit established under section 16 shall be composed of representatives of all

of the agencies described as 1-7, and such agencies as the Cabinet Secretary may designate described as 8-16 below.

Members	Designation	Status of Membership
Director-General(Fisheries)	Chair	Permanent
Representative of Police/Internal Security	Member	Permanent
Representative of Judiciary	Member	Permanent
Representative of County Government (County Director of Fisheries)	Member	Permanent
Representative of BMUs	Member	Permanent
Representative Of NEMA	Member	Permanent
Representative of Public Health and Sanitation	Member	Permanent
Representative of Defence	Member	co-opted
Representative of Cooperatives	Member	co-opted
Representative of Water	Member	Co-opted
Representative of Immigration	Member	Co-opted
Representative of Kenya Revenue Authority	Member	Co-opted
Representative of Kenya Wildlife Service	Member	Co-opted
Representative Kenya Maritime Authority	Member	Co-opted
Representative Kenya Ports Authority	Member	Co-opted
Representative of East Africa Community / Foreign Affairs	member	Co-opted

SECOND SCHEDULE

S.53(2)

7

DESIGNATED FISH LANDING STATIONS

1. Indian Ocean

S/No.	Name of Landing site	District	Division/ Location	County
	Shimoni	Msambweni	Vanga	Kwale
	Mkokoni	Lamu	Hindi	Lamu
	Mombasa	Mvita	Mvita	Mombasa

No. 35 s. 201

THIRD SCHEDULE

CONDUCT OF THE AFFAIRS OF THE FISH MARKETING AUTHORITY BOARD

- (1) The Board of the Authority shall meet at least once in every three months to conduct the business of the Board of Authority.
- (2) The Chairperson may or upon request call a special meeting of the Board of the Authority at any time, where he or she considers it expedient for the transaction of the business of the Board of the Authority.
- (3) At the first meeting of the Board of Authority, the members shall elect a vice-chairperson, not being an ex-officio member, from among its members.
- (4) Other than a special meeting, or unless three quarters of members agree, at least twenty one days' written notice of every meeting of the Board of the Authority shall be given to every member of the Board of the Authority by the secretary.
- (5) The quorum at a meeting of the Board of the Authority shall be half of the members or a greater number determined by the Board of the Authority in respect of an important matter.
- (6) The Chairperson shall preside at the meetings of the Board of the Authority and in the absence the vice-chairperson, and in his absence, a member of the Board of the Authority elected by the members present from among their number shall preside.
- (7) The matters of the Board of the Authority shall be decided by a majority of the members present and voting and in the event of equality of votes, the person presiding shall have a casting vote.
- (8) The proceedings of the Board of the Authority shall not be invalidated by reason of a vacancy among the members or a defect in the appointment or qualification of a member.
- (9) Subject to the provisions of this Schedule, the Board of the Authority may determine its own procedure and the procedure for any committee of the Board of the Authority and for attendance of any other persons at the meetings and may make standing orders in respect thereof.

FOURTH SCHEDULE

(s.211)

2016

1. The Agriculture, Fisheries and Food Authority Act is amended—

Amendment to Act No. 13 of 2013.

- (a) in the long title, by deleting the word ", Fisheries" appearing between the words "Agriculture" and "and Food Authority";
- (b) in the short title, by deleting the word ", Fisheries" appearing between the words "Agriculture" and " and Food Authority Act, 2013".
- (c) in section 1, by deleting the word ",Fisheries appearing between the words "Agriculture" and "and Food Authority";
- (d) in section 2, in the definition "agriculture" by deleting—
 - (i) the words "(whether or not covered by water)" appearing between the words "use of land" and "for any purpose";
 - (ii) the words ",aquaculture" appearing between the words "husbandry" and " and food production";
 - (iii)paragraph (b);
 - (iv)paragraph (d);
- (e) in section 2, in the definition "Authority" by deleting the word ", Fisheries" appearing between the words "Agriculture" and "and Food Authority;
- (f) in subsection (1) of section 3, by deleting the word ",Fisheries" appearing between the words "Agriculture" and "and Food Authority";
- (g) in subsection (3) of section 3, by deleting the word ",and Fisheries Act" appearing before the word "respectively" and inserting the word "and between the words "the Crops Act" and " the Livestock Act":
- (h) in paragraph (a) of section 4 by deleting the words "and the Fisheries Act" appearing before the words "in accordance with the provisions of these Acts";

- (i) in paragraph (b) of section 4, by deleting the words—
 - (i) "and aquatic" appearing before the words "agricultural"; and
 - (ii) "and the Fisheries Act" appearing at the end of the paragraph;
- (j) in paragraph (c) of section 4, by deleting the words "and aquatic" appearing before the words "agricultural" "and deleting the words "and the Fisheries Act" appearing after the words "the Crops Act";
- (k) in paragraph (d) of section 4, by deleting the words "and aquaculture" appearing between the words "agriculture" and "to advise generally on research thereof":
- (l) in paragraph (e) of section 4, by deleting the words "and aquatic" appearing between the words "on agricultural" and "levies for purposes of planning";
- (m) in paragraph (f) of section 4, by deleting the words "the Fisheries Act" appearing between the words "the Crops Act" and "and any written law";
- (n) in subsection (1) of section 11, by deleting the words "and including a Directorate of fisheries and Food production" and substituting therefor the words "and shall include a directorate on food production";
- (o) by deleting subsection (2) of section 11;
- (p) in subsection (4) of section 11,by deleting the words "and aquatic" appearing between the words "management of that agricultural" and the word "product";
- (q) in subsection (3) of section 21, by deleting the words "and fishing" appearing between the words "agricultural" and "purposes"; and
- (r) in subsection (1) of section 22, by deleting the words "and aquatic resources" appearing between the words "agricultural land" and the words "either in Kenya"; and

- (s) by deleting paragraphs (g), (h) and (i) of subsection (2).
- 2. The Kenya Agricultural and Livestock Research Act is amended—

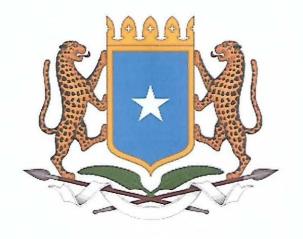
Amendment to Act No. 17 of 2013.

2016

- (a) in subsection (1) (a) of section 5, by deleting the words "marine and fisheries" appearing between the words "livestock" and "genetic resources";
- (b) in subsection (2) (b) of section 32, by deleting the word "fisheries" appearing between the words "livestock" and "forestry and environment";
- (c) in subsection (2) (b) of section 32, by deleting the words "forestry and fisheries production" and substituting therefor the words "and forestry";
- (d) in the Second Schedule by deleting paragraphs (c) and (r);
- (e) in the third Schedule by deleting paragraph (e); and
- (f) in the Fourth Schedule by deleting paragraph (b).

Annex 2

Federal Republic of Somalia, Ministry of Petroleum and Mineral Resources, Somali Petroleum Law, February 2020



FEDERAL REPUBLIC OF SOMALIA

MINISTRY OF PETROLEUM AND MINERAL RESOURCES

SOMALI PETROLEUM LAW



MOGADISHU FEBRUARY 2020

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PREFACE:

THE PARLIAMENT OF THE FEDERAL REPUBLIC OF SOMALIA, TAKING INTO ACCOUNT THE ECONOMIC DEVELOPMENT AND ENCOURAGING INVESTMENT IN THE COUNTRY'S NATURAL RESOURSES, ENACTS THE PETROLEUM LAW OF THE FEDERAL REPUBLIC OF SOMALIA.

CHAPTER I THE GENERAL PROVISIONS Article 1 Foundations of the Petroleum Law

Pursuant to Article 7(1), 44, [63(b), 69(1)(a)] and 79[(1) (d)] of the Provisional Constitution, the Federal Parliament of Somalia enacts this Law that shall apply in the Federal Republic of Somalia and its territories both offshore and onshore.

Article 2 Definitions

In this Law:

- "Authorization" means a Reconnaissance Authorization, a Production Sharing Agreement, a Surface Access Authorization, or any agreement made by the Government in respect of such an authorization or agreement.
- 2. "Authorized Area" means the area from time to time the subject of an Authorization.
- 3. "Authorized Person" means:
 - (i) In respect of a Production Sharing Agreement, a Contractor; and
 - (ii) In respect of any other Authorization, the Person to whom the Authorization has been granted.
- 4. "Calendar Year" means a period of twelve months commencing on January 1st and ending on the following December31th, according to the Gregorian calendar.
- 5. "Contract Area "means the Authorized Area under a Production Sharing Agreement.
- 6. "Contractor" means a Person with whom the Ministry of Petroleum and Mineral Resources has made a Production Sharing Agreement.
- 7. "Control" means, in relation to a Person, the power of another Person to secure:
 - (i) By means of the holding of shares or the possession of voting power, in or in relation to the first Person or any other Person; or
 - (ii) By virtue of any power conferred by the articles of association of, or any other document regulating, the first Person or any other Person that the affairs of the first Person a re-conducted in accordance with the wishes or directions of the other Person.



- 8. "Crude Oil" means crude mineral oil and all liquid hydrocarbons in their natural state or obtained from Natural Gas by condensation or extraction.
- 9. "Decommission" means, in respect of the Authorized Area or a part of it, as the case may be, to abandon, decommission, transfer, remove and/or dispose of structures, facilities, installations, equipment and other property, and other works, used in Petroleum Operations in the Authorized Area, to clean up the Authorized Area and make it good and safe, and to protect the environment.
- 10. "Good Oil Field Practice" has the meaning given in section 36.1.
- 11. "Government" means the Government of the Somali Republic, acting through its appropriate officials or Ministry, as determined by the Council of Ministers.
- 12. "Inspector" has the meaning given in section 39.1.
- 13. "Law" means this Petroleum Law, as amended or modified from time to time.
- 14. "Ministry" means the ministry from time to time responsible for the administration of this Law, as established by the Government, and which shall initially be the Ministry of Petroleum.
- 15. "Minister" means the minister of the Government from time to time responsible for the administration of this Law, as established by the Government, and which shall initially be the Ministry of Petroleum and Mineral Resources.
- 16. "Natural Gas" means all gaseous hydrocarbons and inert, including wet mineral gas, dry mineral gas, casing head gas and residue gas remaining after the extraction of liquid hydrocarbons from wet gas, but not Crude Oil.
- 17. "Operator" means an Authorized Person or other Person named in an Authorization or unitization agreement to organize and supervise Petroleum Operations.
- 18. "Parliament" means the Federal Parliament of Somalia;
- 19. "Person" includes a corporation or other legal entity.
- 20. "Petroleum" means:
 - (i) Any naturally occurring hydrocarbon, whether in a gaseous, liquid or solid state; or
 - (ii) Any mixture of naturally occurring hydrocarbons, whether in a gaseous, liquid or solid state.
- 21. "Petroleum Operations" means activities for purpose of:
 - (i) Prospecting for Petroleum;
 - (ii) Exploration for, development, production, sale or export of Petroleum; or
 - (iii) Construction, installation or operation of any structures, facilities or



installations for the development, production and export of Petroleum, or decommissioning or removal of any such structure, facility or installation.

- 22. "Production Sharing Agreement" means an agreement made or given pursuant to Article 3, pursuant to which the Contract or receives a share of the Petroleum resulting from the conduct of Petroleum Operations as compensation for its activities.
- 23. "Public Officer" means a civil servant or equivalent individual, members of Parliament or of Government, solicitor general Judges or Public Prosecutors, or an officer the Somali Petroleum Authority.
- 24. "Reconnaissance Authorization" means an authorization granted pursuant to Article 23.
- 25. "Regulations" shall mean those rules and regulations issued from time to time by the Ministry with respect to the management of Petroleum Operations, as contemplated by this Law.
- 26. "Reservoir "means a porous and permeable underground formation containing an individual and separate natural accumulation of producible hydrocarbons (oil and /or gas) that is confined by impermeable rock and /or water barrier sand is characterized by a single natural pressure system.
- 27. "State-Owned Contractor" means a Person incorporated under the laws of Somalia which is controlled, directly or indirectly, by a government of a Federal member state.
- 28. "Somali Petroleum Authority" or "SPA" means the authority established pursuant to Article 19 of this Law.
- 29. "SONOC" means the corporation established pursuant to Article 20.
- 30. "Surface Access Authorization" means an authorization granted pursuant to Article 25;
- 31. "Territory of Somalia" consists of all land, waters, and airspace over which Federal Republic of Somalia has sovereignty, including its territorial sea and its continental shelf, and further includes its exclusive economic zone, which has previously been submitted to the United Nations. Federal Republic of Somalia has sole and exclusive rights for the purposes of exploring for, developing and producing its natural resources;
- 32. "Somalia": means the Federal Republic of Somalia;
- 33. "Well": means a perforation in the earth's surface dug or bored for the purpose of producing Petroleum;
- 34. "Agreement on ownership, Management and Sharing of the Natural Resources of the Country": means the Agreement on ownership, management and sharing of the income from the natural resources of the Country (petroleum & minerals), signed in Baidoa on the 5th of June, 2018,



35. "Heads of the Executive":

- a. At Federal level: means the Prime Minister of the Federal Republic of Somalia;
- b. At Regional State: means the Presidents of the Regional States and the Benadir Region;

Article 3 Purpose (s)

This Law shall have as its purpose:

- 1. to confirm the sovereign rights of Somalia to explore, develop, utilize and manage its petroleum resources, located onshore and offshore.
- 2. to allow efforts to be undertaken to determine the extent of the Petroleum resources which may exist in Somalia, by creating a regulatory, contractual and financial regime that allows the reconnaissance and exploration of Petroleum, and development, production and marketing of any Petroleum which is discovered;
- 3. if Petroleum resources are discovered in Somalia, to provide maximum benefit to Somalia and its people from the development and production of Petroleum;
- 4. to ensure the protection, conservation and preservation of the environment in the conduct of Petroleum Operations;
- 5. to encourage and support foreign investment which aims to attain the other purposes of this Law;
- 6. To establish the Somalia Petroleum Authority as the competent regulatory authority to regulate Petroleum Operations, applying regulatory principles of equality, openness, accountability, transparency and non-discrimination;
- 7. to establish the Somali National Oil Company as an entity Controlled by the Government for the participation in Petroleum Operations in Somalia;
- 8. to comply with international initiatives to ensure transparency of extractive industries, by enhancing public financial management and accountability, recognizing that management of natural resource wealth for the benefit of Somali citizens is in the domain of the Government, to be exercised in the interests of national development; and
- 9. to ensure fair treatment of specified legal persons holding rights pursuant to Petroleum grants made by the Somali Democratic Republic on or before December 30, 1990.

Article 4 Ownership of the Petroleum

The Petroleum is a national asset which belongs to all the people of Somalia and shall be vested in the Federal Republic of Somalia and the Federal Member States, in trust for the people of Somalia.



Article 5 Proprietor of Natural Resources

The Federal Republic of Somalia is the proprietor of its natural resources both onshore and offshore.

Article 6 Sharing of Petroleum Income

Petroleum income will be shared between the Federal State and the Regional Federal Member States in accordance with the "Agreement on Ownership, Management and Sharing of the Country's Natural Resources" (Petroleum & Minerals), in light of Article 44 of the Federal Provisional Constitution.

Article 7 Management of the Petroleum

- 1. The Petroleum resource will be jointly managed by the Federal Government, the present Federal Member States, the future member states and the Benadir Region, according to Article 2 of the Agreement on the Ownership, Management and Sharing of the Income from the Natural Resources of the Country (petroleum & mineral).
- The National Resources' Council is the highest council in which are analyzed all the issues
 related to natural resources that need to be agreed upon and refer all unresolved matters to the
 other executive councils, namely the executives at the Federal and Member State level.

Article 8 Planning for distributing the shares of petroleum income to non-petroleum regions

The Federal Government shall ensure that the non-producing regions get their share of petroleum income, in accordance with the Agreement on the Ownership, Management and Sharing of the Country's Natural Resources (petroleum & mineral).

Article 9 Petroleum Companies that had Previous Dealings with Somali Governments

- All agreements pertaining to petroleum that were signed with administrations existing in parts
 of Somalia or previous provisional governments in the period between December 1990 up to
 September 2012 are considered null and void.
- 2. All the agreements signed between foreign companies with the Somali government before 1991 are considered as valid agreements and they will be given good consideration.
- 3. These companies which had previous agreements before 1991 will have to renew them with the Federal Government of Somalia in accordance with Article 54.



Article 10 Methods of Securing and protecting The petroleum after extraction

The Federal Government of Somalia, in collaboration with the Federal Member states, is responsible to protect and secure petroleum companies and petroleum operations throughout various regions and districts of the country.

Article 11 Environmental protection

The petroleum companies that hold licenses should protect the environment of the areas affected by theirs operations in accordance with national laws, international treaties on the environmental protections.

Those companies should protect the safety of:

- a. Humankind.
- b. Animals
- c. Farm and pasture
- d. Seaside
- e. Rivers
- f. Lakes
- g. Atmosphere
- h. Land/Sand
- i. ETC

The Federal Government of Somalia must ensure that those companies fulfill their obligations to protect the environment in accordance with the provisions of this Law and its regulations.

Article 12 Damage Compensation due to the private assets

Any exploration or drilling operations damaging any human and private assets must be equitably compensated by the petroleum companies.

Article 13 Power of issuing the petroleum licenses for exploration

Foreign companies, national companies and joint companies who are doing the exploration and drilling for petroleum, can only and exclusively make agreement with the Federal government for the conduct of petroleum operations in Somalia, in accordance with Article 19.14 and 24.1 and the Agreement on the Ownership, Management and Sharing of the Country's Natural Resources.



CHAPTER II GENERAL PROVISIONS Article 14 Territorial Scope of Law

This Law applies to the Territory of Somalia.

Article 15 Material Scope of Law

- 1. Scope: This Law applies to Petroleum Operations.
- Other Minerals: The existence of an Authorization in force in a given area does not prevent Authorization of the exploration and production of mineral substances other than Petroleum, provided that such other activity does not hinder the proper performance of the Petroleum Operations.

Article 16 Title to Petroleum

- Title to Petroleum. Title to, and control over, Petroleum in the Territory of Somalia are National
 property and are vested in the Federal Republic of Somalia and Federal Member States, in trust
 for its people.
- Transfer of Title after Recovery. A Person may acquire title to Petroleum only after it has been lawfully recovered under a Production Sharing Agreement issued pursuant to this Law.

Article 17 Exercise by the Ministry and SPA of its Powers and Functions

- The Ministry and the Somalia Petroleum Authority shall exercise their powers and discharge their functions under this Law and the Regulations, including under Authorizations made hereunder, in such a manner as:
 - to ensure sound resource management;
 - to ensure that Petroleum is developed in a way that minimizes damage to the natural environment, is economically sustainable and contributes to the long-term development of Somalia;
 - to ensure that it be implemented in a reasonable way and is consistent with Good Oil Field Practice.
- Opportunity for presenting grievance. Before exercising any such power or discharging any such Function, the Ministry and the Somalia Petroleum Authority may give opportunity to Persons likely to be affected to make grievance to it, and shall give consideration to the relevant grievance received by it, if it deems right.



Article 18 Functions of Ministry

- 1. The Ministry shall perform the following functions:
 - a. make decision on strategies, plans and policies for the development of the Petroleum industry;
 - b. issue regulations with respect to the management of Petroleum Operations as recommended to the Ministry by the Somalia Petroleum Authority as contemplated by this Law;
 - c. make decision on policies and forms of cooperation with foreign entities, including the approval of the forms of Model Authorizations prepared by the Somalia Petroleum Authority;
 - d. manage the process of substituting Production Sharing Agreements for rights granted by the Somali Democratic Republic on or before December 30, 1990, as contemplated by paragraph 54.1;
 - e. establishing policies to promote or restrict petroleum export to protect the interest of Somalia;
 - f. to monitor developments in Petroleum Operations in Somalia and in border regions close to Somalia; and
 - g. deal with, in collaboration with, the concerned government institutions, ministries, departments responsible for regulations in adjacent countries regarding Petroleum activities that may have cross-border impacts, such as cross-border Reservoirs or pipelines.
 - h. the Government may confer on the Ministry such additional functions in relation to the regulation and monitoring of Petroleum Operations and, where appropriate; associated matters connected with the functions for the time being of the Ministry as are appropriate.
- 2. Ministry Confidentiality. When staffs of the Ministry at national and regional level perform their lawful functions, they shall be obligated to maintain the confidentiality of commercial secrets of persons and enterprises of which they become aware where the Ministry is satisfied that:
 - a. disclosure of the information could reasonably be expected to result in a material loss or gain to a person directly affected by the functions of the Ministry, or could reasonably be expected to prejudice the person's competitive position; or
 - b. the financial, commercial, scientific or technical information that is confidential information supplied to the Ministry and the information has been consistently treated as confidential information by a person directly affected by the functions of the Ministry, and the Ministry considers that the person's interest in confidentiality outweighs the public interest in disclosure.



Article 19 Establishment and Functions of Somalia Petroleum Authority (SPA)

1. Establishment of SPA:

This Law establishes the Somali Petroleum Authority as the competent and inclusive authority to regulate Petroleum Operations under the jurisdiction of the Ministry.

2. Time of Formation:

- a. The SPA shall be formed and be entitled to exercise its powers on the date of its formation.
- b. The SPA will be formed and will start performing its functions within 6 months from the day this Law comes into force.

3. SPA administration.

- a. The Board of Directors of SPA shall consist of two members (2) representing the Federal Government, with one member representing each existing or future (when they formed) Regional Member States and the Benadir Region.
- b. The members of the SPA shall be selected for their knowledge, professionalism, competence and integrity.
- c. The member states shall submit to the Ministry the names of the members representing them.
 The Minister shall transmit to the Council of the Ministers both the members representing the Federal Member States along with those representing the Federal Government for approval.
- d. Members shall hold office during good behavior for a period of four years, but may be removed for cause at any time by the Government. Cause for removal shall include any breach of Articles 19.8 or 19.9 or ceasing to be eligible to be a member under Article 19.5.
- **4. Staff of SPA.** The Secretary-General and the other staff necessary for the proper conduct of the business of the SPA shall be appointed by the Board of Directors of the SPA.
- 5. Qualifications of Members. A person is not eligible to be appointed or to continue as a member of the SPA if that person is not a Somali citizen or is, as owner, shareholder, director, officer, partner or otherwise, engaged in the business of producing, selling, buying, transmitting, exporting, importing or otherwise dealing in Petroleum in Somalia or holds any bond, debenture or other security of a corporation engaged in any such business.
- **6. Qualifications of Staff.** A person is not eligible to be appointed or to continue as staff of the SPA if that person is, as owner, shareholder, director, officer, partner or otherwise, engaged in the business of producing, selling, buying, transmitting, exporting, importing or otherwise dealing in Petroleum in Somalia or holds any bond, debenture or other security of a corporation engaged in any such business.



- 7. SPA Chair. The Government shall designate one of the members to be Chairperson of the Board of Directors of the SPA and another of the members to be Vice-Chairperson of the Board of Directors the SPA. The Chairperson is the Chief Executive Officer of the SPA, and has supervision over and direction of the work and staff of the SPA. If the Chairperson is absent or unable to act or if the office is vacant, the Vice-Chairperson has all the powers and functions of the Chairperson.
- 8. Duty of Care. Members and staff of the SPA shall perform their duties faithfully, do their work according to law and be impartial and honest. They may not take advantage of their positions to seek illegitimate gains.

9. SPA Confidentiality.

When the SPA and its members and staff perform their lawful functions, they shall be obligated to maintain the confidentiality of commercial secrets of persons and enterprises of which they become aware where the SPA is satisfied that:

- a. disclosure of the information could reasonably be expected to result in a material loss or gain to a person directly affected by the functions of the SPA, or could reasonably be expected to prejudice the person's competitive position; or
- b. the financial, commercial, scientific or technical information that is confidential information supplied to the SPA and the information has been consistently treated as confidential information by a person directly affected by the functions of the SPA, and the Authority considers that the person's interest in confidentiality outweighs the public interest.
- 10. The Head Office of SPA. The head office of Somali Petroleum Authority shall be in Mogadishu, the capital city of the Federal Republic of Somalia.
- 11. Subsidiary offices. The SPA shall keep under review the volume of regulatory work that relates to persons whose Petroleum Operations fall wholly within the boundaries of a particular State of Somalia. Where the SPA finds that the volume of such work justifies the creation of a regional office of the SPA in that State, or that a regional office should be established for more than one State, it shall so advise the Ministry. The Ministry may then issue the authorization of establishing that regional office, the Government shall appoint three members of SPA that shall have an office in that region.

Two of the SPA members from that region will be chosen from a list consisting of five persons who are eligible and competent for that work and shall be submitted by the regions to the Government.

The provisions of this law on appointment, time, termination, terms of employment, confidentiality, and other related matters shall equally be applicable to members of the SPA who operate in that regional office.

Applications, authorizations, decisions, directions or orders which the SPA is required or entitled to handle and that relate to Petroleum Operations that are wholly within the boundaries of a State which the regional office of the SPA has been established to serve shall be handled by that office.



In performing its duties, the regional office of the SPA shall observe federal principles, policies, objectives and standards and adhere to national guidelines specified by the SPA.

12. Duty of SPA. The SPA shall regulate Petroleum Operations according to this Law and other laws of Somalia.

13. Functions of SPA. The SPA shall perform the following functions:

- a. to regulate, through the issuance, monitoring, modification and enforcement of Authorizations and the issuance of decisions, orders and directions under this Law and the Regulations, the conduct of Petroleum Operations in accordance with and subject to the provisions of this Law;
- to ensure proper qualification of Authorized Persons, including without limitation, ensuring that Authorized Persons are commercially and financially competent, and credit worthy persons with the technical capability to perform their obligations;
- c. to ensure compliance by the relevant persons with any Authorization, rule, decision, order or direction issued by the SPA in accordance with this Law;
- d. study and keep under review matters relating to the Petroleum industry which the Ministry requests the SPA to monitor, and report from time to time on such matters and recommend such measures as it considers necessary or advisable in the public interest for the control and development of that industry.

The Government, on the recommendation of the Ministry, may confer on the SPA such additional functions in relation to the regulation, monitoring and control of Petroleum Operations and associated matters connected with its functions deemed appropriate and necessary.

- **14. Powers of SPA.** When performing its functions according to law, the SPA shall have the following powers:
 - a. to grant Reconnaissance Authorizations in accordance with paragraph of Article 23.1.;
 - b. to negotiate Production Sharing Agreements in accordance with paragraph of Article 24.1.;
 - c. to grant Surface Access Authorizations in accordance with paragraph of Article 25.1.;
 - d. to grant exemptions from burden that may the authorized person face in accordance with Article 34;
 - e. to modify and revoke any Authorization in accordance with this Law, the Regulations and the provisions of the Authorization;
 - f. to make and enforce directions to ensure compliance with Authorizations;
 - g. inquire into, hear and determine any matter where it appears to the SPA that any person has failed to do any act, matter or thing required to be done by this Law, the Regulations or by any Authorization, decision, order or direction made by the SPA, or that any person has done or is



doing any act, matter or thing contrary to or in contravention of this Law, the Regulations or any such Authorization, decision, order or direction;

- h. order and require any person to do at any specified time and in any manner prescribed by the SPA, any act, matter or thing that such person is or may be required to do under this Law, the Regulations or any Authorization or rule, or any decision, order or direction made or given under this Law or the Regulations; and forbid the doing or continuing of any act, matter or thing that is contrary to this Law, the Regulations or any such Authorization, rule, decision, order or direction;
- i. in connection with the foregoing, to gather information, including compelling the provision of information from any Authorized Person;
- j. assess penalties for the breach of any Authorization, decision, order or direction of the SPA, in accordance with Chapter VIII;
- k. work cooperatively with foreign regulators, ministries or departments responsible for regulation in adjacent countries regarding cross-border Petroleum Operations or pipelines;
- 1. to make rules in accordance with paragraphs (17) and (18) of Article 19; and
- m. of its own motion inquire into, hear and determine any other matter or thing that under this Law or the Regulations it may inquire into and determine.

15. Investigation.

It shall be the duty of the SPA to investigate or cause to be investigated whether any relevant requirement or condition of an Authorization has been or is being contravened.

16. Cooperation with SPA.

When the SPA and its members and staff perform their lawful functions, persons and enterprises under inspection or investigation shall cooperate and provide truthful and relevant documents and materials. Such persons and enterprises may not refuse to cooperate, and should attempt to obstruct inspection or investigation or conceal relevant documents or materials.

17. SPA Operational Rules.

The SPA may, following consultation with the Ministry, make such rules as appears to it requisite or expedient having regard to its duties and functions, including rules requiring or prohibiting certain commercial conduct of Authorized Persons so as to ensure the orderly functioning of the Petroleum industry in Somalia. Rules made pursuant to this paragraph (17) may not have the effect of amending or materially altering the provisions or conditions of any Authorization. Amendments and material alterations to Authorizations may only occur pursuant to Article 34.

18. SPA Procedural Rules.

The SPA may make rules respecting the sittings of the SPA, the procedure for making applications, representations and complaints to the SPA and the conduct of hearings before the SPA, and the Manner



of conducting any business before the SPA, and generally, the carrying on of the work of the SPA, the management of its internal affairs and the duties of its staff. When making these rules, the SPA shall seek to incorporate principles of openness, transparency, accountability and independence.

- 19. Annual report. At the end of every year, within six months, the SPA shall submit to the Ministry a report on its yearly activity.
- 20. Public Documents. The SPA shall make available to the public:
 - a. the rules established by the SPA pursuant to Article 19.17. and 19.18.;
 - b. decisions, orders and directions of the SPA;
 - c. penalties imposed by the SPA;
 - d. general reports provided in paragraph 19.19.;
 - e. the model forms of any Reconnaissance Authorization, Surface Access Authorization or Production Sharing Agreement; and
 - f. the Authorizations issued by the SPA.
- 21. Ministry's Role re SPA. The Ministry may provide general policy guidance to the SPA in connection with the performance of the SPA's functions under this Law and the Regulations. Policy guidance provided by the Ministry shall be published by the Ministry in the same manner as other legislative and policy matters are published. When performing its duties under this Law or the Regulations, the SPA shall consider the policy directives issued by the Ministry. The Ministry should not intervene in any specific issue or matter that may be brought before the SPA.
- 22. Appeal. Except as provided in this paragraph (22), every decision, order or direction of the SPA is final and conclusive. An appeal may be made to the SPA from a decision, order or direction of a regional office of the SPA on any question. An appeal may be made to Supreme Court from a decision, order or direction of the SPA on a question of law, or of jurisdiction, or bias on the part of a member of the SPA who participated in the decision, order or direction, or of compliance with the rules of procedural fairness described in paragraph (23) of article 19. No appeal lies from a decision of the SPA on any other grounds. An application for appeal must be made within sixty days after the release of the decision, order or direction sought to be appealed.
- 23. Procedural Fairness. In performing its functions under this Law or the Regulations, the SPA shall:
 - a. give notice to interested persons of any application received or hearing that the SPA is to conduct in the manner provided in this Law or the Regulations;
 - b. conduct hearings with respect to the issuance, revocation or suspension of Authorizations in those circumstances provided for in this Law or the Regulations;
 - c. give written reasons for its decisions, orders and directions, which reasons shall be given at the time of the decision, order or direction; and



- d. where a decision, order or direction is made after a hearing, render its decisions based on the evidence, argument and information presented at the hearing.
- 24. Fees, Levies and Charges. The Ministry, considering the advice of the SPA, may for the purposes of recovering all or a portion of incurred costs as the SPA determines to be attributable to its responsibilities under this Law or the Regulations, impose reasonable fees, levies or charges on any enterprise that hold an Authorization issued pursuant to this Law or the Regulations, and provide for the manner of calculating the fees, levies and charges in respect of the person or company and their payment. The SPA may also specify a certain amount of penalty and the manner of calculating that penalty payable by an enterprise on any fee, levy or charge not paid by the person or company on or before the date it is due.

Article 20 Establishment and Functions of Somali National Oil Company (SONOC)

- 1. Somali National Oil Company (SONOC) is established as a juridical person in the form of a corporation.
 - a. The head office of SONOC shall be at a place in capital city of the Federal Republic of Somalia.
 - b. SONOC has, in respect of its powers, all the rights, powers, privileges and capacity of a natural person.
 - c. This Law shall apply to the SONOC in the same terms as is applicable to any other Authorized Person, with the required adaptations.
- 2. Purpose of SONOC. The purpose of the SONOC is to be a commercial enterprise Controlled by the Government to conduct Petroleum Operations in Somalia. SONOC shall be entitled to exercise the right of participation referred to in article 35(1). SONOC may acquire an Authorization by direct acquisition or pursuant to a bid process conducted by the SPA in the same manner as any other Person.
- SONOC Board of Directors. SONOC shall have a Board of Directors comprised of the General Manager, two members representing the Federal Government and one representative for each Federal Member State.
 - a. The Chairperson is to be appointed by the Government to hold office for a term that the Government considers appropriate.
 - b. The General Manager of SONOC is to be appointed by the Government to hold office with good behaviour for a term that the Government considers appropriate and may be removed for cause. The Managing Director is eligible for reappointment on the expiration of his or her term of office.
 - c. The other directors are to be appointed by the Government based on recommendations of the Ministry, for a term of no more than three years so as to ensure, as far as possible, the



- expiration in any one year of the terms of office of not more than half of the directors. Any other director is eligible for reappointment on the expiration of his or her term.
- d. Subject to Section 20.3.5, no individual is eligible to be appointed or to continue as Chairperson, Managing Director or a director unless the individual is a Somali citizen.
- 4. Role of SONOC Board. The Board shall direct and manage the business and affairs of SONOC:
 - a. The Board may, by resolution, make by-laws to regulate the business and affairs of SONOC.
 - b. The Board may establish an Executive Committee, or any other committee or advisory group that the Board considers advisable, and determine its composition and duties and the tenure of its members.
 - c. The Board may delegate power to, and specify duties and authority of, the Executive Committee to act in all matters that are not by this Act or any by- law or resolution specifically reserved to be done by the Board.
 - d. The Chairperson shall carry out the duties determined by by-law.
 - e. The General Manager is the chief executive officer of SONOC and has, on behalf of the Board, the direction and management of the business and affairs of SONOC with authority to act in all matters that are not by this Law or any by-law or resolution specifically reserved to be done by the Board or the Executive Committee. The Government may change the title of the Managing Director to such other title as it determines appropriate, so long as the functions of the holder of that office retains the role of chief executive officer.
 - f. If the General Manager is absent or unable to act, or if the office of General Manager is vacant, the Board may authorize an officer or employee of SONOC to act as General Manager, but that person may not act as General Manager for a period of more than ninety days without the approval of the Government.
- 5. SONOC Officers and Employees. SONOC may employ such officers and employees, and may engage such agents, advisers and consultants, as it considers necessary to carry out the purpose of this Law and for the proper conduct of its business and Somalia Corporation may fix the terms and conditions of their employment or engagement.
- 6. Remuneration of SONOC Board. The Chairperson and each director, except the General Manager and any director employed in the public service of Somalia, are entitled to be paid by SONOC the remuneration fixed by the Ministry for their time to attend meetings of the Board or any committee of the Board and to perform their duties under this Law.
- 7. SONOC Directors Expenses. Directors are entitled to be paid by SONOC reasonable travel and living expenses incurred in connection with the performance of their duties under this Act while absent from their ordinary places of residence. Stefall LOOP!

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- Remuneration of SONOC Officers and Employees. Officers, employees, agents, advisers and
 consultants are entitled to be paid by SONOC the remuneration, expenses and benefits
 that SONOC may determine
- 9. **Transfer of shares.** If the holder of an authorization decides to transfer all or part of his shares, the SONOC has right to acquire such shares at the market price.
- 10. Petroleum Companies of the Federal Member States. The petroleum companies of the Federal Member States are business enterprises that serve and represent share and the interests of the Federal Member States in the petroleum business of the SONOC, with the responsibility of building and managing the federal member states' fuel infrastructure and marketing the amount of fuel used in the country, without compromising the values of free market principles.

Article 21 Restrictions to Rights of Public Officers

1. Conflict of Interest Restrictions.

Public Officers shall not acquire, attempt to acquire or hold:

- a. an Authorization or an interest, whether direct or indirect, in an Authorization; or
- b. a share in company (or an affiliate of it) that holds an Authorization.

2. Consequence of Contravention.

Any instrument that grants or purports to grant, to a Public Officer, an interest, whether direct or indirect, in an Authorization shall, to the extent of the grant, be void.

3. Relations.

The acquisition or holding of an Authorization, interest or share by the minor children or spouses of a Public Officer shall be deemed to be an acquisition or holding by the Public Officer.

4. Exception.

This Article 21 does not apply to Public Officers who are directors, officers or employees of or consultants to SONOC to the extent that their interest in an Authorization is held by SONOC.

Article 22 Graticulation

For the purposes of this Law, the Territory of Somalia, or parts thereof, shall be divided into blocks according to a grid system which conforms to accepted international standards and norms of graticulation.



CHAPTER III OF PETROLEUM OPERATIONS Article 23 Reconnaissance Authorizations

1. Power to Grant.

The Somalia Petroleum Authority may grant a Reconnaissance Authorization, in respect of a specified area, to a Person or a group of Persons.

2. Rights under Reconnaissance Authorization.

- a. A Reconnaissance Authorization grants a right to perform geological, geophysical, geochemical and geotechnical surveys in the Authorized Area.
- b. The Reconnaissance Authorization shall require the Authorized Person to report on the progress and results of such prospecting, and to maintain confidentiality with respect thereto.
- c. Nothing in a Reconnaissance Authorization authorizes the holder to drill a Well or to have any preference or right to enter into a Production Sharing Agreement.

3. Overlapping Authorizations.

Prior to granting a Reconnaissance Authorization in respect of an area that is the subject of an existing Authorization, the SPA shall give written notice to the holder of the existing Authorization.

4. Surrender and Termination.

- a. The holder of a Reconnaissance Authorization may surrender it at anytime by written notice to the SPA, provided that the Authorized Person has fulfilled all its obligations thereunder.
- b. If the holder has not complied with a condition to which the Reconnaissance Authorization is subject, the SPA may terminate it by written notice to the holder after giving the holder a reasonable opportunity to cure the condition.

Article 24 Production Sharing Agreements

1. Power to Grant

The Somalia Petroleum Authority may conclude a Production Sharing Agreement, in respect of a specified area, with a Person or a group of Persons provided that if a group, such group has entered into a joint operating agreement approved by the SPA under article 31 paragraph (1). Each Production Sharing Agreement shall be signed by the Minister, based on a recommendation from the SPA.

2. Qualification of Contractors

In order to be eligible to enter into a Production Sharing Agreement, a Person must:



- a. have, or have access to, the financial capability, and the technical knowledge and technical ability, to carry out the Petroleum Operations in the Contract Area;
- b. not have a record of non-compliance with principles of good corporate citizenship; and
- c. be a limited liability corporation or entity with limited liability.
- d. must be covered with appropriate international insurance.

3. Exclusivity

- a. Without prejudice to Article 25, or the right of the SPA to grant a Reconnaissance Permit, a Production Sharing Agreement grants to the Contractor the exclusive right to conduct Petroleum Operations in the Contract Area.
- b. The Production Sharing Agreement may be limited to Crude Oil, Natural Gas or other constituents of Petroleum.
- c. The initial contract area under a Production Sharing Agreement may not exceed 5,000 km2.

4. Notice of Discovery

- a. A Contractor shall give written notice to the SPA within twenty four (24) hours whenever any Petroleum is discovered in its Authorized Area.
- b. The Contractor shall provide such information relating to the discovery requested by the SPA.

5. Work Programs Plans & Budgets

A Production Sharing Agreement shall oblige the Contractor to carry on Petroleum Operations only in accordance with work programs, plans and budgets approved by the SPA.

6. Required Provisions of PSA

A Production Sharing Agreement shall include provisions addressing the following matters:

- a. a minimum work obligation to be performed during an exploratory phase of the term of the Production Sharing Agreement;
- b. relinquishment of portions of the contract area during the exploratory phase;
- c. financial terms respecting royalties (if any), and the sharing of Petroleum between the Contractor and the Government;
- d. if appropriate, financial features other than royalties and sharing of Petroleum including signature and production bonuses;
- e. environmental provisions directed at protecting and preserving the environment;
- f. if appropriate, obligations respecting the supply of petroleum to the Somali domestic market, especially in emergency situations; SPERMITEUM AND MINERAL PLES

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- g. training and hiring of Somali citizens;
- h. preference for the supply of Somali-sourced goods and services;
- i. if appropriate, assurances of financial and contractual stability; and
- i. International arbitration.

7. Taxation under PSA.

Taxation under Production Sharing Agreement shall be imposed through special laws in conformity with the financial system of the Country.

8. Surrender and Termination.

- a. The holder of a Production Sharing Agreement may surrender it at any time by written notice to the SPA, provided that the Contractor has fulfilled all its obligations thereunder.
- b. If the Contractor has not complied with a condition to which the Production Sharing Agreement is subject, the SPA may terminate it by written notice to the Contractor after giving the Contractor a reasonable opportunity to cure the condition.
- 9. The authorized person must have office in Somalia to conduct petroleum operations and will have a representative with full powers and acting as representative of the authorized person, promises that are obligatory to perform. The authorized person must open current bank account in Somalia.

Article 25 Surface Access Authorizations

1. Power to Grant.

- a. The Somalia Petroleum Authority may grant a Surface Access Authorization, in respect of a specified area, to a Person or a group of Persons.
- b. The SPA may not grant a Surface Access Authorization in respect of an area that is the subject of a Production Sharing Agreement or a Reconnaissance Authorization until it has taken into account any submissions made by the holders of such Authorizations in such a way that there is no undue interference with the rights of that other Authorized Person.

2. Rights Granted.

- a. A Surface Access Authorization, while it remains in force, authorizes the holder to do one or more of the following:
 - (i) construct, install and operate structures, facilities and installations;
 - (ii) carry out other works, as specified in the Authorization in the Authorized Area.
- b. Nothing in a Surface Access Authorization authorizes the holder to drill a Well.



3. Surrender and Termination.

- a. A Surface Access Authorization:
 - (i) may be surrendered by the holder by written notice to the SPA, provided that the Authorized Person has fulfilled all its obligations thereunder; and
 - (ii) may be terminated by the SPA at any time by written notice to the holder, if the holder has not complied with a condition to which the Authorization is subject after giving the holder a reasonable opportunity to cure the condition.
- b. The SPA shall provide written notice of the surrender or termination to any Authorized Person in whose Authorized Area operations were authorized to be carried on by the Surface Access Authorization concerned.

4. Coordination of Operations.

The SPA may give a direction to the holders of Surface Access Authorizations and to other Authorized Persons regarding the coordination of their respective Petroleum Operations.

Article 26 **Invitation to Apply**

1. Application for Authorizations

- a. The Somalia Petroleum Authority shall invite, wherever possible by public notice, applications for Authorizations, which shall be the preferred method of granting such Authorizations.
- b. Notwithstanding Section 26.1.a, the SPA may elect to award Authorizations through direct negotiation without issuing such invitations, where it is in the public interest to do so, based on a direction from the Ministry or the Government.
- c. If the SPA grants an Authorization without inviting applications, it shall provide reasons for its so doing to the Ministry and the Government.
- d. The application shall be submitted in one of the official or second languages of Somalia or, in the event that they are written in any other language, be accompanied by an official translation into one of the official or second languages of Somalia, and shall be submitted in a closed envelope.

2. Contents of Invitation.

a. An invitation shall specify the area concerned, the proposed activities, the criteria upon which applications will be assessed, the applicable fees (if any) to be paid with the application, and the time by which, and the manner in which, applications may be made and considered, through the public opening of bids.

b. Unless the invitation otherwise states, the SPA may choose not to award an Authorization to any of the applicants. SENDLEUM AND MINERAL MESS

3. Contents of Application.

- a. An application for an Authorization shall include proposals for:
 - securing the health, safety and welfare of persons involved in or affected by the Petroleum Operations;
 - ii. protecting the environment, preventing, minimizing and remedying pollution, and other environmental harm from the Petroleum Operations;
 - iii. training of, and giving preference in employment in the Petroleum Operations to, nationals of Somalia;
 - iv. commitments to benefit the local community in the Authorized Area and to minimize and mitigate any adverse effects of Petroleum Operations in the Authorized Area; and
 - v. the acquisition of goods and services from Persons based in Somalia.
- b. An Authorization awarded to an applicant obliges it to comply with its proposals as mentioned in Section 26.3.a.

4. Due Consideration of Applications.

The SPA shall not grant an Authorization in respect of an area until it has given due consideration to all applications made in response to, and in compliance with, an invitation.

Article 27 Petroleum Operations Generally.

1. Third Party Access. Every Production Sharing Agreement and Surface Access Authorization shall require that third party access be granted on reasonable terms and conditions.

2. Joint and Several.

- a. If there is more than one Authorized Person in respect of a particular Authorization, the obligations and liabilities of the Authorized Person under an Authorization are the obligations and liabilities of them all, jointly and severally.
- b. With respect to a Production Sharing Agreement, the SONOC and any State-Owned Contractor may be exempted by the SPA of the requirement set out in article 27.2.b.
- 3. Effect of Violation of Laws. An Authorization is void ab initio, if obtained in violation of the laws of Somalia, including laws concerning corruption.



Article 28 Environmental Protection

1. Environmental Duties.

Authorized Persons conducting Petroleum Operations are required to:

- a. prevent environmental damage;
- b. avoid waste of Petroleum:
- c. prevent damage or waste of Petroleum-bearing strata;
- d. prevent pollution and waste to land and structures, fresh water resources / aquifers, crops, marine and animal life;
- e. prevent the escape of Petroleum into the environment through uncontrolled flows or discharges;
- f. provide for emergency clean-up operations and procedures;
- g. in appropriate circumstances, conduct an environmental baseline study before commencing Petroleum Operations, and an environmental impact assessment of any major proposed Petroleum Operations;
- h. utilize Good Oil Field Practice in the restoration of the environment at the conclusion of Petroleum Operations;
- i. To establish a fund for cleanup of an area effected by pollution and restore damage caused by it.

2. Environmental Regulations.

The Minister shall enact Regulations which more clearly define the obligations of an Authorized Person under Article 28 (1).

3. The complaint for damage relating to pollution should be submitted to the competent court.

Article 29 Restitution and Reparation

1. Requirement for Authorization.

No person shall conduct Petroleum Operations in the Territory of Somalia Republic except pursuant to an Authorization issued pursuant to this Law or the Regulations.

2. Restitution.

Without prejudice to any criminal liability of that Person, a Person who engages in Petroleum Operations other than pursuant to an Authorization shall:

a. make restitution to Somalia Republic of an amount equal to the market value of Petroleum developed, produced or exported, together with late payment interest thereon at a rate not to exceed the legal rate of interest to be determined by the Ministry;



- either forfeit all infrastructure and equipment used in engaging in those Petroleum Operations, or remove such infrastructure and equipment or be liable for the payment of the costs of such removal; and
- c. clean-up pollution resulting from those Petroleum Operations, or reimburse the costs of clean-up to Somalia.

3. Quantum.

The liabilities under Section 29.1 shall apply cumulatively, or not, as is determined to be appropriate by the SPA, with a view to place Somalia in the position in which it would have been were it not for the Petroleum Operations engaged in other than pursuant to an Authorization.

4. Joint and Several Liabilities.

The liabilities, under paragraph (1) of article 29, of Persons who, together, are engaged in, or have engaged in, Petroleum Operations are the liabilities of them all, jointly and severally.

Article 30 Restrictions on Exercise of Rights

1. Fair Compensation to Surface Owners.

- a. An Authorized Person shall not exercise any of the rights granted under an Authorization or under this Law:
 - i. on any public immovable property without the consent of the SPA;
 - ii. on any private immovable property of the State without the consent of the SPA; or
 - iii. on any private immovable property without payment of fair and reasonable compensation to the owner, as may be determined by the SPA.
- a. The owner of any immovable property in an Authorized Area retains rights to the use of its land except in so far as the use interferes with Petroleum Operations.
- b. An Authorization may limit or otherwise control the use by an Authorized Person of public infrastructure, and the consumption of other natural resources, including trees, sand, gravel, rock and water.
- c. An Authorization does not constitute a waiver of the obligation to seek the written consent of responsible authorities, except as may be specifically described in the Authorization.

2. No Interference with Lawful Offshore Activities.

An Authorized Person shall not exercise any of the rights under an Authorization or under this Law or the Regulations in a way that interferes with fishing, navigation or any other lawful offshore operation without the written consent of the responsible authority.

3. Compensation for Disturbance.



- a. The Authorized Person is liable to pay fair and reasonable compensation as determined by the SPA if, in the course of Petroleum Operations, it:
 - disturbs the rights of the owner of any immovable property, or causes any damage thereon; or
 - ii. Demonstrably interferes with fishing, navigation or any other lawful offshore activities.
- b. Where the value of any rights have been enhanced by the Petroleum Operations, compensation payable in respect of such rights shall not exceed any amount which would be payable if the value had not been so enhanced.

4. Fair and Reasonable Compensation.

What constitutes fair and reasonable compensation under this Article 30 shall be decided by the SPA, after having considered representations by interested parties.

5. Failure to pay compensation.

If the authorized person fails to pay the compensation mentioned in paragraph 2, when requested, or if the owner or the occupier is not satisfied with the amount of compensation offered to him, he/she may, within 30 days from the date on which the offer is made, initiated proceedings or file claim before the competent local court.

Article 31 Approvals by SPA

1. Approval of Agreements.

A joint operating agreement, a lifting arrangement and any agreement related to the Petroleum Operations, as well as any changes to such agreements, shall be subject to prior approval by the SPA. The SPA shall approve any such agreements or amendments where they are consistent with the Authorizations, the Law and the Regulations.

2. Approval of Change in Control.

- All changes in Control of an Authorized Person shall be subject to prior approval by the SPA.
- b. Where a change in Control occurs without the prior approval of the SPA, the SPA may terminate the applicable Authorization.
- c. For the purposes of Article 31.2.1, change in Control includes a Person ceasing to be in Control (whether or not another Person becomes in Control), and a Person obtaining Control (whether or not another Person was in Control).



3. Approval of Transfers.

Except with the prior written consent of the SPA (which consent may not be unreasonably withheld or delayed), or as explicitly provided in the terms of the Authorization, no assignment, transfer, conveyance, novation, merger, encumbrance or other similar dealing in respect of an Authorization shall be of any force or effect. The Regulations shall describe the criteria by which the SPA shall assess the suitability of its consent.

Article 32 Unitization Contract

1. Unitization.

- a. If and when a Reservoir is discovered to lie partly within a Contract Area, and partly in another Contract Area:
 - i. the SPA may require by written notice the Contractors to enter into a unitization agreement with each other for the purpose of securing the more effective and optimized production of Petroleum from the Reservoir; and
 - ii. if no agreement has been reached within a period of eighteen (18) months from receipt of written notice as required in sub-paragraph (1/a.) of article 32, the SPA shall decide on the unitization agreement.
- a. If and when a Reservoir is discovered to lie partly within a Contract Area and partly in an area that is not the subject of a Production Sharing Agreement:
 - i. the SPA may require by written notice the Contractor to enter into a unitization agreement with the SPA for the purpose of securing the more effective and optimized production of Petroleum from the Reservoir; and
 - ii. if no agreement has been reached within a period of eighteen (18) months from receipt of written notice as required in article 32 subparagraph 1.b.i, the SPA shall decide on the unitization agreement, unless otherwise provided in the Production Sharing Agreement.

2. Unitization Agreement.

Without limiting the matters to be dealt with, the unitization agreement shall define the amount of Petroleum in each area covered by the unitization agreement, and shall appoint the Operator responsible for production of the Petroleum covered by the unitization agreement.

3. Requirement of Approval

The SPA may approve the continued development or production of a Reservoir partly within a Contract Area under Section 32.2 only after it has approved or decided the unitization agreement.

4. Approval of Changes.

Any changes to the unitization agreement shall be subject to prior approval by the SPA.

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Article 33 Resolution of Disputes

1. SPA Role in Disputes.

- a. The SPA may inquire into and decide all disputes involving Persons engaged in Petroleum Operations, either:
 - i. among themselves, where agreements between them do not specify a dispute resolution mechanism; or
 - ii. in relation to third parties (other than the Government) not so engaged, as long as these third parties accept the jurisdiction of the SPA for the resolution of the dispute.
- b. The SPA may refuse to decide any dispute referred to it and, if it does so, it shall notify the parties to the dispute in writing.
- c. The SPA may, taking into account all relevant circumstances, give any direction which may be necessary for the purpose of giving effect to its decision in proceedings pursuant to this Article 20, including ordering the payment, by any party to a dispute, to any other party to the dispute of such compensation as may be fair and reasonable.

2. Disputes relating to Authorizations.

- a. If a dispute arises relating to the interpretation and/or application of the terms of an Authorization between an Authorized Person and the SPA, the parties shall attempt to resolve that dispute by means of negotiation.
- b. If the dispute cannot be resolved amicably by negotiation, either Party may submit the dispute to international arbitration under recognized rules, in a neutral venue, or to the Supreme Court, at the election of the submitting Party.

Article 34 Exemption from or Variation of Conditions

The SPA may exempt an Authorized Person from complying with the conditions of its Authorization, and may also agree to vary or suspend those conditions, either with or without conditions and either temporarily or permanently, provided that the SPA shall provide written reasons for its doing so to the Ministry. This Article 34 does not include the power to waive or suspend an obligation to pay any amount due under an Authorization.

CHAPTER IV SOMALI PARTICIPATION Article 35

SONOC and State Participation in Petroleum Operations

1. SONOC and State Participation.

Each Production Sharing Agreement shall stipulate:



- a. the right of SONOC to participate in Petroleum Operations, up to a maximum participation right of 20%; and
- b. the right of a State-Owned Contractor which is Controlled by the Federal Member State of the Federal Republic of Somalia in which the Authorized Area is located to participate in Petroleum Operations, up to a maximum participation right of 10%.

2. Decision to Participate.

The decision by SONOC to participate in Petroleum Operations under a particular Production Sharing Agreement shall be made by the Minister, if a recommendation to participate has been made by SONOC. The decision by a State-Owned Contractor which is Controlled by the State of the Somalia Republic in which the Authorized Area is located to participate in Petroleum Operations shall be made by the government of the State in which the Authorized Area is located.

3. Timing of Decision.

The participation rights under Section 35.1 may occur during any phase of Petroleum Operations in accordance with the terms and conditions established in the Production Sharing Agreement.

CHAPTER V CONDUCT OF PETROLEUM ACTIVITIES Article 36 Work Practices

1. Good Oil Field Practice.

Petroleum Operations shall be conducted in accordance with Good Oil Field Practice, that is, in accordance with such practices and procedures employed in the petroleum industry worldwide by prudent and diligent operators under conditions and circumstances similar to those experienced in connection with the relevant aspect or aspects of the Petroleum Operations, principally aimed at guaranteeing:

- a. Conservation of Petroleum resources, which implies the utilization of adequate methods and processes to maximize the recovery of hydrocarbons in a technically and economically sustainable manner, with a corresponding control of reserves decline, using principles of maximum efficient production rates and other conservation principles, and to minimize losses at the surface;
- b. operational safety, which entails the use of methods and processes that promote occupational security and the prevention of accidents;
- c. environmental protection, that calls for the adoption of methods and processes which minimize the impact of Petroleum Operations on the environment;



2. Conservation.

Production of Petroleum shall take place:

- a. in such a manner that as much as possible of the Petroleum in place in each individual Petroleum deposit, or in several deposits in combination, will be produced;
- b. in accordance with Good Oil Field Practice and sound economic principles;
- c. and in such a manner that waste of Petroleum or reservoir energy is avoided.

3. Continuous Evaluation.

Contractors shall carry out continuous evaluation of production strategy and technical solutions, shall take the necessary measures in order to achieve this, and shall inform the SPA of any relevant changes, in accordance with Good Oil Field Practice.

Article 37 Decommissioning

1. Timing of Decommissioning.

An Authorized Person shall decommission on the earlier of:

- a. termination of the Authorization; and
- b. when no longer required for Petroleum Operations;
- c. except with the consent in writing of the SPA and in accordance with the conditions of the consent; or
- d. unless the Authorization otherwise provides.

2. Detail in Authorizations and Regulations.

Authorizations shall contain provisions addressing the Decommissioning of Petroleum Operations. The Ministry, based on advice and recommendations from the SPA, may make Regulations under this Law relating to Decommissioning of Petroleum Operations.

3. Fund for decommissioning.

The authorized person must establish a fund for the decommissioning, immediately after the approval of production and operation or issuance of the authorization for the transportation system, as provided in the regulations. The decommissioning must be sufficient to fully cover the expenses of the decommission.



CHAPTER VI INFORMATION AND INVESTIGATION Article 38 Data and Information

1. Title to Data and Information.

Somalia shall have title to all data and information, whether raw, derived, processed, interpreted or analyzed, obtained pursuant to any Authorization. Appropriate obligations of confidentiality shall apply, as contemplated by Sections 18.2 and 19.9.

2. Export of Data.

Data and information acquired during the course of Petroleum Operations may be freely exported by Authorized Persons provided that the SPA may require that an original, or in the case of a core, rock, fluid or other physical sample, a usable portion of the original, of all data and information, both physical and electronic, be kept in Somalia.

Article 39 Audit and Inspection

1. Inspector.

- a. The SPA may appoint a person to be an inspector for the purposes of this Law (an "Inspector").
- b. The Inspector will have the powers and rights provided to it in the Regulations.

2. Access to Books and Accounts.

On request, an Authorized Person shall make its books and accounts available to the SPA for auditing.

Article 40 Termination of Authorizations

1. Termination.

- a. Termination of an Authorization for any reason is without prejudice to rights and obligations expressed in this Law, the Regulations or the Authorization to survive termination, or to rights and obligations accrued thereunder prior to termination, and all provisions of an Authorization reasonably necessary for the full enjoyment and enforcement of those rights and obligations survive termination for the period so necessary.
- b. The SPA shall have the power to terminate an Authorization as set out in the Authorization.

2. Multiple Authorized Persons.

a. If there is more than one Authorized Person in respect of a particular Authorization and circumstances arise in which the SPA may terminate an Authorization, the SPA may elect to terminate an Authorization only in respect of those Authorized Persons whose acts or omissions (or in relation to whom acts, omissions or events have occurred which) have led to such circumstances, and shall so notify the remaining Authorized Persons.

b. Should the SPA terminate an Authorization under Section 40.2.b. it shall give the remaining Authorized Persons right of preference in the acquisition of the terminated share, in proportion to their respective shares. Any share not acquired by the remaining Authorized Persons shall revert to Somalia.

Article 41 Indemnification of the Government and Ministry and SPA

1. Indemnification.

An Authorized Person shall:

- a. defend, indemnify and hold harmless the Government, Ministry and the SPA from all claims by third parties resulting, directly or indirectly, from Petroleum Operations, and pay all compensations relating to any civil liability claims, pretensions or demands; and
- b. unless the Ministry is satisfied, after consultation with the Authorized Person, that the potential liability under article 41.1.1. can be covered by other means, including the posting of corporate or bank guarantees or standby letters of credit, maintain insurance in respect thereof on a strict liability basis for such amount as the Ministry requires from time to time.

CHAPTER VII PUBLIC INFORMATION Article 42 Publication by SPA

1. Publication.

The SPA shall publish, in the Official Bulletin:

- a. notice of the grant of Authorizations, and a summary of the terms of such Authorizations;
- b. invitations for applications for Authorizations under article 26.1.1.
- c. notice of the termination of Authorizations.

2. Publishing Invitations.

The SPA shall publish invitations for applications for Authorizations under article 26.1.1. in the media, in such manner as is required by the Regulations.

Article 43 Public Information

1. Public Access.

- a. The SPA shall make available to the public:
 - i. summaries of key terms of all Authorizations and amendments thereto, whether or not terminated;



- ii. details of exemptions from, or variations or suspensions of, the conditions of an Authorization under Article 34; and
- iii. copies of all unitization agreements.
- b. The SPA shall make available to the public, within a reasonable period of time of a request having been made therefor, summary details of:
 - i. an approved Development Plan;
 - ii. all assignments and other dealings consented to in respect of Authorizations, subject to commercial confidence as to the commercial terms.

2. Publication of Reasons.

Within ten (10) business days of a request having been made, the SPA shall publish brief reasons for:

- a. granting an Authorization subsequent to an invitation, as contemplated at article 26.1.1.;
- b. granting an Authorization without inviting applications, as contemplated at article 26.1.2.;
- c. approving a Development Plan under a Production Sharing Agreement;
- d. granting an exemption from, or agreeing to a variation or suspension of, the conditions of an Authorization under Article 34; and
- e. making any decision or granting any approval that, under an Authorization, requires publication.

3. Compliance Reports.

- a. Companies shall report on their compliance with requirements under the Law and Authorizations in such manner and detail as required by their Authorization and as provided by the Regulations.
- b. The SPA shall make available such reports to the public, except for any portions of such reports which the Authorized Person requests be maintained confidential, and which the SPA reasonably considers to be commercially confidential.

4. Public Access to Payment Information.

The SPA shall make available to the public such reports by Authorized Persons on payments relating to Petroleum Operations made to the Government of Somalia.

5. Fees for Access.

The information contemplated in this Article 43 shall be available to any Person on payment of the fee therefor, to be provided by regulation.

6. Language.

The information contemplated in article 43.1.2. shall be available in at least one official or second language of Somalia.



Article 44 Transparency

1. Transparency Principles.

The following principles shall apply in respect of Petroleum Operations, and shall be implemented in this Law, and in Regulations enacted pursuant to this Law, and in the rules, directions, decisions and orders made pursuant to this Law:

- a. There shall be regular publication of all material Petroleum-related payments by Authorized Persons to the Government and all material revenues received by the Government from Authorized Persons to a wide audience in a publicly accessible, comprehensive and comprehensible manner.
- All material payments and revenues are the subject of a credible, independent audit, applying international auditing standards.
- c. All material payments and revenues are to be reconciled by a credible, independent administrator appointed by the Government, applying international auditing standards and with publication of the administrator's opinion regarding that reconciliation including discrepancies, should any be identified.
- d. Persons representing the Somali business community who are not involved in Petroleum activities shall be actively engaged as a participant in the design, monitoring and evaluation of the processes contemplated by this Article 44.1.
- e. These principles shall apply to SONOC and any other State-Owned Contractor.

CHAPTER VIII REGULATIONS AND DIRECTIONS Article 45 Regulations

1. Power to Make Regulations

The Ministry, based on advice and recommendations from the SPA, may make Regulations under this Law relating to the following:

- a. graticulation of the Territory of Somalia;
- b. the exploration for and the development and production of Petroleum;
- c. the use and disclosure of data, information, records and reports;
- d. the measurement and sale or disposal of Petroleum;
- e. health and safety;
- f. protection and restoration of the environment;
- g. resource management;



- h. structures, facilities and installations;
- i. the clean-up or other remedying of the effects of the escape of Petroleum;
- j. abandonment and Decommissioning;
- k. the control of movement into, within and out of Somalia of persons, vessels, aircraft, vehicles and any other man-made platforms and structures;
- l. work programmes and budgets;
- m. the control of tariffs charged for third party access;
- n. the auditing of an Authorized Person and of its accounts and records;
- o. reporting by Authorized Persons on compliance with obligations set out in the Law and Authorizations, including in relation to:
 - i. the training and employment of Somalia nationals,
 - ii. procurement of Somalia goods and services,
 - iii. occupational health and safety, and
 - iv. environmental protection.
- p. fees to be paid, including by applicants for Authorizations, Authorized Persons, and Persons wishing to inspect the public register; and
- q. any other matters relating to this Law.

2. Regulatory Principles.

When making regulations, the Government shall seek to minimize prescriptive provisions in favour of results-based or performance-based provisions, and utilize accepted international standards to the greatest extent possible.

3. Publication of Regulations.

The Ministry shall publish regulations in the official Bulletin.

Article 46 Directions

In addition to its power to give directions under article 25.4. and article 33.1.3., the SPA may give a direction to an Authorized Person:

- a. relating to any matter set out in article 45.1.; or
- b. otherwise requiring compliance with this Law, the Regulations or its Authorization.



CHAPTER IX PENALTY PROVISIONS

Article 47

Territorial and Material Scope of this Chapter

The provisions of this Chapter are without prejudice to criminal and civil liability under the general law.

Article 48 Offence and penalties

Offences resulting from unauthorized petroleum operations; danger to people, property and environment; hindering the exercise of powers by the Inspector; false or misleading information; non-compliance with regulation or directions and fundamental terms of authorization; and penalties and fines related to the said offences shall be provided with special law.

Article 49 Liability of Legal Persons, Corporations and Other Legal Entities

1. Liability of Entities and Representatives.

Legal persons, corporations or any other legal entities, including those without juridical personality, are liable for contraventions provided for in this Chapter when committed by its organs or representatives in its name and in the collective interest.

2. Due Diligence Defense.

The liability is excluded where the agent has acted against express orders or instructions properly issued.

3. Agent Liability.

The liability of the entities mentioned in Section 49.1 does not exclude the individual liability of the respective agents.

4. Joint and Several Liability.

The entities mentioned in Section 49.1 are jointly and severally liable, as provided for in civil law, for the payment of any fines or compensations, or for the fulfillment of any obligations, derived from the facts or with incidence on matters covered by the scope of this Law.

Article 50 Fines to Legal Persons, Corporations and Other Legal Entities

1. Fines.

In the case of legal persons, corporations or any other legal entities, including those without juridical personality, the amount of the fines shall be as determined by the court, taking into account the economic and financial situation of the legal person, corporation or other legal entity and the severity and consequences of the offence.

2. Access to Assets.

If the fine is applied to an entity without juridical personality, its payment will be guaranteed by the entity's assets and, in the event of non-existence of such assets or under-capitalization, jointly and severally, the assets of each of the associates.

Article 51 Inspection

The SPA and the Inspector, as well as any other organs of the public administration to which inspection duties may be delegated in accordance with law and regulations, are responsible to ensure the inspection of compliance with the provisions of this Law or the Regulations.

Article 52 Extrajudicial Writ of Execution

For purposes of coercive collection under general law, a certification issued by the SPA in relation to a debt constituted, or amount due, as a result of the application of the provisions of this Law or the Regulations, which is not paid within a reasonable period to be determined by the SPA, and which shall be notified in writing to the debtor, constitutes an extrajudicial writ of execution.

Article 53 Subsidiary Legislation

1. Criminal and Other Legislation.

The general criminal law, as well as relevant administrative and civil legislation, of Somalia is applicable in a subsidiary manner, with the required adaptations, to give effect to the provisions of this Chapter.

2. No Conflict.

To the extent that the provisions of any other laws of Somalia conflict with the provisions of this Law or the Regulations, they shall be null and void as regards their application to Petroleum Operations.

CHAPTER X OTHER AND FINAL PROVISIONS Article 54 Transitional Provision

- 1. Prior Grants. With the approval of the Government, the Ministry shall issue Regulations setting out the administrative procedure to be followed, as well as obligations to be undertaken, by Persons who have engaged in or are engaging in Petroleum Operations ("Prior Contractors") pursuant to rights granted by the Somali Democratic Republic on or before December 30, 1990 ("Prior Grants"). Such Regulations shall include the following provisions:
- a. a Prior Contractor shall have the right to convert its Prior Grant into the form of Authorization that is most similar to the Prior Grant. A Prior Grant in the form of a concession entitling the Prior Contractor to conduct exclusive Petroleum Operations shall be convertible into a Production Sharing Agreement.



- i. A Prior Contractor wishing to convert its Prior Grant shall provide to the Ministry:
 - a true copy of a fully executed Prior Grant;
 - evidence satisfactory to the Ministry that it was on December 30, 1990 in full compliance with its obligations under the Prior Grant;
 - a copy of a record of its performance under the Prior Grant, including the relinquishment of any part of the contract area under the Prior Grant;
 - a copy of all data and information required by the Prior Grant to be delivered to the Government;
 - identification of the current parties to the Prior Grant, and how the current parties acquired their interest in the Prior Grant from the original parties;
- ii. agree that its Decommissioning obligations under the new Authorization shall include Decommissioning of its activities conducted pursuant to the Prior Grant;
- iii. agree to the terms of a new Authorization between the Prior Contractor and the Ministry on or before a date specified by the Ministry, which shall not be later than the date described in Article 54.2.

b. an Authorization under Article 54.1 shall be consistent with the principles of this Law, the Regulations and the model contract published by the SPA pursuant to Article 19.20.e.

- 2. Effort to Contact. The Ministry shall make reasonable efforts to contact each Prior Contractor, so far as it is able to determine who they may be, to advise them of their rights under Article 54.1. Where a Prior Grant appears to be held by more than one Person, the Ministry need only make a reasonable effort to contact the Person who appears to the Ministry to be the operator. No Prior Contractor shall have any right against the Ministry or the Government for a failure by the Ministry to fulfill this Article 54.2.
- **3. Deadline for Conversion.** If any Prior Grant that has not been converted into a Production Sharing Agreement under this Law on the first anniversary of the coming into force of this Law, then:
 - a. the Prior Grant shall terminate and cease to be a binding obligation on the Government on the first anniversary of the coming into force of this Law;
 - b. the Government shall not be liable for any loss, costs, claim or damage resulting from such termination of the Prior Grant; and
 - c. as a sovereign entity, the Government declares itself immune from any claim made by a Prior Contractor for termination of its Prior Grant.
- 4. Post-1990 Grants. Effective on the date of the coming into force of this Law:
 - a. any right to conduct Petroleum Operations in Somalia granted after December 30, 1990 shall terminate and cease to be a binding obligation on the Government;



- b. the Government shall not be liable for any loss, costs, claim or damage resulting from such termination; and
- c. as a sovereign entity, the Government declares itself immune from any claim made by any Person for termination of any such right.

Article 55 Entry into Force

This Law shall come into force when it signed by the President of the Federal Republic of Somalia and published in the Official Bulletin of the Federal Republic of Somalia.





جمهورية الصومال الفيدرالية مكتب الرئيس

Taariikh: 08/02/2020

Federal Republic of Somalia Office of the President

SHARCI LR. 19

ANSIXINTA SHARCIGA BATROOLKA JF SOOMAALIYA

MADAXWEYNAHA J.F.S

MARKUU ARKAY: Qodobka 87aad, Faqradda 1aad iyo Faqradda 2aad ee Dastuurka KMG

MARKUU ARKAY: Qodobka 90aad, Xarafka "F" ee Dastuurks KMG

MARKUU ARKAY: Warqadda Gudoomiyaha Golaha Shacabka Lr.GSH241/12/01/B-10/20

taariikh 09/01/2020 kuna saabsan ansixinta Sharciga Batroolka

Soomaaliya

MARKUU TIXGELIYAY: Baahida loo qabo in la ansixiyo lana meel-mariyo Sharcigan

Waxa uu Madaxweynuhu soo saaray Sharcigan:

Qodobka 1aad

Laga billaabo marka uu Madaxweynuhu saxiixo Sharcigan, waxa si rasmi ah loo oggolaaday Sharciga Batroolka JF Soomaaliya.

Qodobka 2aad

Marka uu Madaxweynaha JFS saxiixo Sharcigan, waxa lagu soo daabici doonaa Faafinta Rasmiga ah ee Jamhuuriyadda Federaalka Soomaaliyeed.

MUQDISHO: 08/02/2020

Madaxweynaha J. F.S

Maxamed/Cabdullahi Maxamed "Farmaajo"

Memorandum on EEZ Limits and Boundaries from Major Y. S. Abdi, $KN/16/OPS/TRG,\,11\,\,May\,\,2004$



Date | May 2004

See Distribution

EEZ LIMITS AND BOUNDARIES

- 1. Attached herewith please find an illustration of Kenya's EEZ and Boundaries Co-ordinates for your retention.
- 2. The Co-ordinates are the internationally recognized Kenya's EEZ Limits and Boundaries.
- 3. Please acknowledge receipt.

Y'S ABDI

Major

For Navy Commander

Distribution:

All

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Report on the Fishing Activities and Patterns in Lamu County, Republic of Kenya,
State Law Office of the Republic of Kenya, 23 December 2020 (including
Annexes FR1 to FR43)

REPORT ON THE FISHING ACTIVITIES AND PATTERNS IN LAMU COUNTY, REPUBLIC OF KENYA

State Law Office of the Republic of Kenya

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LIST OF ABBREVIATIONS AND ACRONYMS

вми	Beach Management Unit
CSP	County Spatial Plan
FAO	Food and Agriculture Organization
FGD	Focus Group Discussions
Km	Kilometres
Kshs	Kenyan Shillings
Nm	Nautical Miles

I. INTRODUCTION

This report contains information obtained by the State Law Office of the Republic of Kenya on the fishing communities based in the Lamu County in the Republic of Kenya.

II. EXECUTIVE SUMMARY

A. Objective of the report

This report is composed of data collected by the State Law Office during on-site visits to the fishing communities based in Lamu County in the Republic of Kenya. That research was conducted in order to establish how these communities would be affected if Somalia were awarded the maritime territory that it now claims from Kenya. As part of the data collection, key informant interviews were carried out with representative Beach Management Unit (BMU) Leaders/Heads, fisherfolk and village elders in Lamu County who are active in the fishing industry.

B. Key findings

Lamu is situated on the northern coast of Kenya, bordering Somalia.

The data on which this report is based demonstrates that:

- Fishing is of great historical and cultural significance to the people of Lamu County.
- For generations, the communities of Lamu County have relied on fishing as a livelihood and vital source of food.
- The fishing sector is vital to the economy of Lamu County and serves as a direct and indirect source of income for a majority of the Lamu residents.
- Fishing is the primary occupation for 89 percent of Lamu households, sustaining the livelihood of 70 percent to 75 percent of Lamu residents either directly or indirectly.
- Fisheries are an important resource for enhancing fisherfolk's socio-economic well-being. They are an integral source of cultural identity and a driver for commerce and industry.
- Fish and other marine life are the main source of food and protein to the 144,000 Lamu people. Interviews conducted have shown that almost all local fishing people eat fish every day, as fish is readily available and other meats are often not affordable.
- If Somalia were awarded the disputed maritime territory that it claims, the fishing
 community in Lamu County would be restricted in their current access to the marine
 resources. The economic effects on the region would be devastating, as fishermen
 and fisherwomen could lose prime fishing spots. This would significantly impact
 income of local fishermen and result in loss of livelihood and source of food which, as
 a result, could increase crime and violence in the region.

 Illegal, unreported and unregulated (IUU) fishing is a major issue for the local fishing community in Lamu. This problem would be exacerbated if the currently disputed waters were granted to Somalia, as Somalia does not have the capacity to patrol waters and prevent IUU fishing.

- Increased IUU fishing will lead to a shortage of available fishing resources due to uncontrolled overexploitation, severely affecting local fisherfolk and their families in the Lamu region as well as any other stakeholders depending on the fishing sector.
- Rising insecurity in the horn of Africa region due to instability in Somalia has
 affected fisherfolk and their livelihood, particularly coastal communities in the
 border area close to Somalia. Awarding the disputed maritime territory to Somalia
 would increase insecurity, with commercial fishing likely to be reduced due to fears
 of piracy and hijackings for ransom coming from Somalia.

The report identifies the current threats and challenges to the Lamu fishing communities. This includes issues related to the livelihoods of men, women, youth and other vulnerable groups such as persons with disabilities (PWDs). It also includes social issues related to gender roles. The report further outlines the importance of the fishing sector in Lamu by identifying key environmental safeguarding measures and other marine and aquaculture policies Kenya has taken.

The Kenyan BMUs were created in 1989 to have exclusive management rights over fish landing sites. They consist of an assembly, an executive committee, and may have subcommittees. In Lamu, there are 42 BMUs representing the tens of thousands of fishermen and fisherwomen in Lamu County. The BMUs are required to provide data on catches and develop co-management plans to ensure sustainable fisheries in Lamu. These management plans must be approved by the Director of Fisheries. They may include measures such as closing areas for fishing, due to decline in aquaculture, restricting fishing gear and the number of fishing vessels. BMUs generate income through membership fees, taxing migrant fishers or vessel registration fees.

A Beach Management Leader is an official elected by vote in a specific beach management site area. The Beach Management Leader serves as the focal point and representative of the other fishermen, fisherwomen, traders and other stakeholders in the beach management site area.

¹ Articles 2, 4, Fisheries (Beach Management Unit) Regulations [Rev. 2012] (L.N. 402/2007), Annex FR1; Article 2, Lamu County Fisheries Development Act (Act No. 3 of 2015), Annex FR2.

III. METHODOLOGY

The data in this report reflects a study carried out with key informant interviews with a representative sample of stakeholders in Lamu comprising BMU Leaders/Heads, fisherfolk and village elders in Lamu County active in the fishing industry. A range of interviewees was chosen to provide an understanding of the impacts of the fishing sector from both a direct and indirect standpoint in relation to men, women, PWDs, youth and children.

Field site visits involved visiting the mixed Bajuni communities living at the international border to southern Lamu County on the Kenyan coast and interaction with the local fishermen and other players in the value chain. The research was driven by acquiring data on the state of fishing in the county and region as a whole and determining the importance of fishing in Lamu as a means of survival and livelihood of the fishing sector reliant population. Data was collated from both county and community members. Members of the team that was created for this specific research went to the various communities in person and carried out the interviews that formed the basis of the report. Meetings were held with fishing sector stakeholders including: fisherfolk, village elders and members of Lamu County BMU. The ensuing discussions were recorded via audio and video.

In addition, this report also relies on a number of publications, including reports of international organisations, bibliography and local studies.

A. Areas of Enquiry

The thematic areas which constituted both the primary and secondary research included:

- Historical and cultural significance of fishing
- Economic importance of fishing
- Reliance and dependence on fishing
- Geographical nature of fishing
- Conservation efforts by Kenya
- Insecurity issues in Lamu County (and their effect on fishing)
- Effect of delimitation (in favour of Somalia) on fishing and Lamu County inhabitants

B. Description of Study Sites

Lamu County is located in the Northern Coast of Kenya and is one of the six Coastal Counties in Kenya. It borders Tana River County in the southwest, Garissa County to the north, Republic of Somalia to the northeast and the Indian Ocean to the South. The county includes

the mainland and over 65 islands that form the Lamu Archipelago. The county has two constituencies namely Lamu West and Lamu East. These two constituencies also consist of the two districts referred to as the sub-counties in Lamu County. Lamu West has Amu Mkomani, Shela, Hindi, Mkunumbi, Hongwe, Bahari and Witu Divisions, while Lamu East has Faza, Basuba and Kiunga divisions. There are 10 wards, 23 locations, and 38 sub-locations in the county.

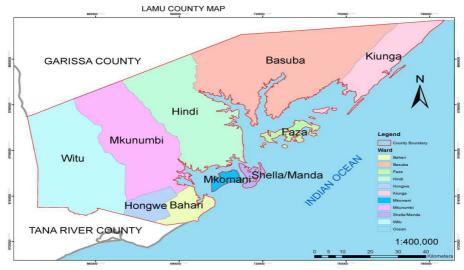


Image 1 Lamu County Map source IEBC Kenya

Within Lamu County, participants were selected to provide a representative view of the fishing sector in Lamu throughout the entire county. Interviews were conducted in the two constituencies of Lamu East and Lamu West, including several of their sub counties.



Image 2 Map of Lamu County showing some community locations source Google Maps

IV. FINDINGS

A. The Invaluable Place of Fishing in Lamu

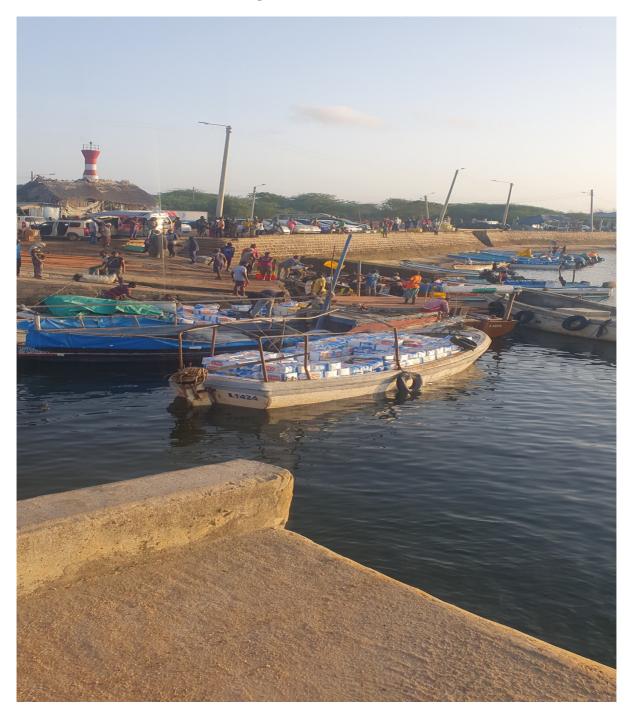


Image 3 Traders and Fishermen at Mkoye

Fishing is the most important economic pillar in the Lamu region. Lamu County's Integrated Development Plan (2018-2022) indicates that Lamu is essentially based on the primary sector. Indeed, the Lamu County Climate Risk Profile notes that agriculture (comprising the

² Lamu County, *Lamu County Integrated Development Plan* (2018-2022), 2018, 12, Annex FR3.

sub-sectors of crops, livestock and fisheries) is a vital sector in Lamu County, contributing approximately 90 percent of household incomes. Only a small 30 percent of the county's population is in a position to depend on livestock such as goat or poultry whether directly or indirectly.³ Within Lamu County, the Lamu County Climate Risk Profile notes that: "Most of the fishermen are poor and depend solely on proceeds from fishing. They also lack a saving culture; thus limited financial ability to cushion them against effects of climate change."⁴

This was also corroborated by the fishermen interviewed as part of research for this report. For example, interviewee Masu Abdalla Masu states: "I have eight children and a family that depends on me. [...] Fishing income helps me educate my children, feed my family and pay house rent. I will not be able to meet my needs if I lose my source of livelihood since I don't have any other job to rely on. I didn't go to school; I only depend on fishing. What will I do if I am barred from fishing?"⁵

Similarly, Suluhu Aweso notes: "We will seriously be affected in terms of income since we don't have any other economic activity here in Kiunga. We are not employed anywhere else. The sea is what we depend on. The sea is what we've seen our fathers depend on since we were young. It's what gives us income and what our lives depend on. If the border is changed then we will seriously be affected. We urge the government to look into this matter and not to allow It happen."

In addition, Barkale Madi Amidi explains: "Everybody here depend on fishing as a means of livelihood. The sea is the farm to the people of Ishakani. It's our farm where we get our daily food. There's no other economic activity we're engaged in [...] If you fail to earn from fishing, you will have no choice but to sleep hungry."⁷



Image 4 A boat leaves the portable fuel stations across Lamu Source: State Law Office of the Republic of Kenya

³ Lamu County, *Lamu County Climate Risk Profile*, 2017, 4, Annex FR4.

⁴ Lamu County, Lamu County Climate Risk Profile, 2017, 8, Annex FR4.

⁵ Video interview of Masu Abdalla Masu, Annex FR₃₁.

⁶ Video interview of Suluhu Aweso, Annex FR39.

⁷ Video interview of Barkale Madi Amidi, Annex FR40.

Fishing as an aspect of marine biodiversity is also a key sector in the region. Indeed, the area has been indicated to have an outstanding and endemic marine biodiversity of diverse coral reefs, sea-grass beds, sand bars, lagoons and creeks⁸ – a wealthy marine ecosystem which is a feature of the Indian Ocean. The waters adjacent to the whole of Lamu County are known to be the most productive marine fisheries area in Kenya. In fact, in the Lamu County Spatial Plan (CSP), it is indicated that the county has an expansive fishing area of the sea (including 40 traditional fishing grounds and 32 landing sites) and an availability of a variety of fish species with potential for improving the economy. This operates complementarily with the fact that the local communities are well-known for their fishing skills as well as skills in boat building, sailing and other marine activities.

The UN Food and Agriculture Organization (FAO) notes that the length of the Kiunga coastline and the Lamu archipelago are major fishing areas. ¹³ For communities like those in Lamu, it notes that "[f]isheries and aquaculture play a significant role in the development and stabilisation of Kenya's rural communities, both coastal and riparian. The combined sector provides employment and income to large numbers of men and women, and food and social cohesion to entire families. [...] Communities living along Kenya's lakes and coastline benefit further in terms of food security, as small-scale fishing is essential to their overall household wellbeing, providing both income and nutrient-rich food." ¹⁴

In Lamu County, marine fisheries comprise 75 percent of the local economy (with inland fishing comprising the remaining 25 percent)¹⁵ and have been the main livelihood strategy for generations, ¹⁶ perhaps hundreds of years.¹⁷ Fishing produces between 1,500 and 2,000 metric tons of fish annually ¹⁸ and sustains the livelihood of 70 to 75 percent of the residents, either directly or indirectly. ¹⁹

This is consistent with the regional and global importance of marine fishing for coastal communities. For example, the UN Environment Programme and the Western Indian Ocean Marine Science Association noted that the Kenyan marine fisheries sector employed about

⁸ Ministry of Transport, Environmental and Social Impact Assessment Study Report or Construction of The First Three Berths of The Proposed Lamu Port and Associated Infrastructure, 2013, 3-6, Annex FR5.

⁹ Ministry of Transport, Environmental and Social Impact Assessment Study Report or Construction of The First Three Berths of The Proposed Lamu Port and Associated Infrastructure, 2013, 3, Annex FR5.

¹⁰ Ministry of Transport, Environmental and Social Impact Assessment Study Report or Construction of The First Three Berths of The Proposed Lamu Port and Associated Infrastructure, 2013, 152, Annex FR5.

¹¹ Lamu County, Lamu County Spatial Plan (2016-2026), Volume II, 2017, 12, Annex FR6.

¹² Heddon S, The Constraints of the Artisanal Fishing Industry in the Lamu District, 2006, 12, Annex FR8.

¹³ Food and Agriculture Organisation, Fishery and Aquaculture Country Profiles: Republic of Kenya, available at: http://www.fao.org/fishery/facp/KEN/en#CountrySector-SectorSocioEcoContribution (last accessed on 21 December 2020), Annex FR7.

¹⁴ Food and Agriculture Organisation, Fishery and Aquaculture Country Profiles: Republic of Kenya, available at: http://www.fao.org/fishery/facp/KEN/en#CountrySector-SectorSocioEcoContribution (last accessed on 21 December 2020), Annex FR7.

¹⁵ Lamu County, Lamu County Climate Risk Profile, 2017, 1, Annex FR4.

¹⁶ Heddon S, The Constraints of the Artisanal Fishing Industry in the Lamu District, 2006, 12, Annex FR8.

¹⁷ Heddon S, The Constraints of the Artisanal Fishing Industry in the Lamu District, 2006, 12, Annex FR8.

¹⁸ Ministry of Transport, Environmental and Social Impact Assessment Study Report or Construction of The First Three Berths of The Proposed Lamu Port and Associated Infrastructure, 2013, 152, Annex FR5. See also Heddon S, The Constraints of the Artisanal Fishing Industry in the Lamu District, 2006, 12, Annex FR8.

¹⁹ Heddon S, The Constraints of the Artisanal Fishing Industry in the Lamu District, 2006, 12, Annex FR8.

27,000 people, including over 13,000 artisanal fishers.²⁰ These fishers engage largely in subsistence fishing in order to support not only themselves but their families and wider relatives, that they share their catch with.²¹ In addition, the fisheries sector indirectly gives employment, such as boat building, equipment repair and fish processing to over two million Kenyans.²² In 2018, the Sustainable Blue Economy Conference took place in Nairobi, Kenya, from which a report arose detailing the commitments that various state actors had made with regard to the blue economy and the several sectors therein. It was highlighted in this report that, globally, fish is the most traded food commodity,²³ providing about 3.2 billion people worldwide with almost 20 percent of their animal protein intake.²⁴ Moreover, the report posited that fisheries and aquaculture are vital components of food supply chain and income generation for local communities, citing a need to improve food chain management over the world in order to reduce waste and promote resource conservation, among other things.²⁵

It is only fair to say that fishing is part of Lamu County DNA. The Lamu County Biocultural Community Protocol is a document procured by two community-based organisations, Lamu Environmental Protection and Conservation as well as Save Lamu. The document was created based on community participation from over 46 villages in the county, including the indigenous communities such as the Bajun, Swahili and Sanye, as well as other recently migrated communities. There is great emphasis given to the cultural, historical and generational importance of fishing to these communities. A significant number of them rely on their nature-based livelihoods for their survival, and they assert that it has been the same throughout their ancestry, Taking specific reference to fishing.

²⁰ UN Environment Programme, Regional State of the Coast Report: Western Indian Ocean, Social and Economic Impacts of Capture Fisheries and Mariculture, 2016, 308, Annex FR9.

²¹ Food and Agriculture Organisation, Fishery and Aquaculture Country Profiles: Republic of Kenya, available at: http://www.fao.org/fishery/facp/KEN/en#CountrySector-SectorSocioEcoContribution (last accessed on 21 December 2020), Annex FR7.

²² UN Development Programme, *Leveraging the Blue Economy for Inclusive and Sustainable Growth*, 2018, 5 Annex FR10.

²³ Sustainable Blue Economy Conference, *Final Report*, 2019, 21, Annex FR11.

²⁴ Sustainable Blue Economy Conference, *Final Report*, 2019, 13, Annex FR11.

²⁵ Sustainable Blue Economy Conference, *Final Report*, 2019, 15, Annex FR11.

²⁶ Lamu Environmental Protection and Conservation and Save Lamu, *Lamu County Biocultural Community Protocol*, 2018, 8-10, Annex FR12.

²⁷ Lamu Environmental Protection and Conservation and Save Lamu, *Lamu County Biocultural Community Protocol*, 2018, 26, Annex FR12.

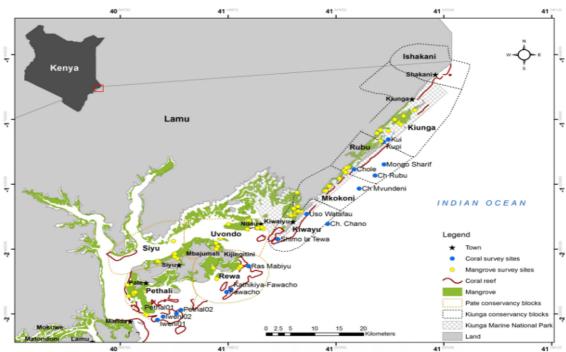


Image 5 Characteristics of the Lamu County coastline (source: https://cordioea.net/marine-habitats-of-the-lamu-kiunga-coast/)

Based on a 2016 estimate, Kenya's coastline communities include 13,426 artisanal fishers.²⁸ Of these, Lamu County has approximately five thousand fishermen who directly exploit its marine fishery resources.²⁹ Fisheries are an important resource for enhancing fishers' socioeconomic well-being, an integral source of cultural identity and a driver for commerce and industry. Fishing is restricted in coastal/inshore waters <4 Nm where, as will be expounded on subsequently, both motorised and non-motorised basic fishing boats are employed to access fishing grounds. Lamu County coastal/inshore area is characterised by inner shallow water reef areas, sheltered tidally-dominated channels and tidal creeks, sea grass beds and sheltered lagoons bordering mangrove ecosystem. Fishing grounds situated in these areas constitute a greater percentage of prominent fishing areas frequented by fishermen along the entire coastline; although there are other fishing grounds situated in offshore deep waters that local fishermen exploit. From the interviews carried out in the research of this report, a large majority of fishermen noted fishing in the Kiunga, Ishakani area was most popular amongst them, due to historical fishing practices by the generations past down to them. The specified area of Kiunga serves the vast majority of the fishermen interviewed in the process of this research as they mentioned the cool waters from the Somali Sea and warm Indian Ocean waters meet, creating a large ecosystem of fish. For example, Niya Abushir, noting that her husband goes fishing in Kinga, states that they "will be severely affected if barred from fishing from the border with Somalia to Kiunga". 30 Similarly, Ahmed Islam notes that his "fishing zones are from Kiunga to Daresalam point".31

²⁸ Kimakwa E and Barabara M S, A review of lobster fishery management in Kenya: a case study on the development of the rights–based fisheries management system (co-management), 2019, 2, Annex FR13.

²⁹ Lamu County, Lamu County Spatial Plan (2016-2026), Volume II, 2017, 54, Annex FR6.

³⁰ Video interview of Niya Abushir, Annex FR₃₇.

³¹ Video Interview of Ahmed Islam, Annex FR20.

Both inshore and offshore fishing grounds are accessible during North East (N.E.) monsoon wind season (Kaskazi), a season characterised by calm water currents, enhanced water clarity and visibility, and reduced rainfall. Hot winds originate from Persian Gulf between November and March/April. South East monsoon wind season (Kusi) is characterised by warm and moist winds between April/May and October and the period experiences heavy rainfall, rough seas and highly turbid waters resulting in extremely reduced water visibility. Offshore fishing areas are largely inaccessible during Kusi, i.e. only inshore fishing grounds are accessible by fishers operating basic fishing crafts.



Image 6 A fishing boat docked at Mkokoni Source: State Law Office of the Republic of Kenya

Fishing in Lamu County evidently has been an intergenerational as well as an intragenerational aspect. As one report noted, the Lamu people have historically been well-known for their skills in fish production, boat building, sailing and other marine activities, even among Kenya's coastal people who have been involved in trans-Indian ocean trade for more than 1,200 years.³² Many of the fishermen interviewed expressed that they had been fishermen for many years, and this was something inherited from their fathers before them. ³³ One of the many examples to be given of this is from the statements of Ahmed Islam, from Kiunga, who communicated that this cultural heritage of fishing dated back to colonial times in the era of the fishermen's grandfathers. He indicated that the fishermen have seen their fathers depend on the sea and on fishing ever since they were very young, showing the intrinsic nature of fishing to the Lamu townsfolk.³⁴

1. Methods of Fishing

Artisanal fishing is the sole fishing activity in Lamu County, and such the methods employed in doing the same are generally smaller scale and low-technology. At the lowest level the

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³² Heddon S, The Constraints of the Artisanal Fishing Industry in the Lamu District, 2006, 12-13, Annex FR8.

³³ See, among others, video interview of Suluhu Aweso, Annex FR₃8; video Interview of Ahmed Islam, Annex FR₂0; and video interview of Fatuma Mohamed, Annex FR₂5.

³⁴ Video interview of Ahmed Islam, Annex FR20.

fishermen merely fish-dive for their catch. However, when it comes to fishing in deeper waters, more appropriate means must be employed. The fishermen put in use wooden dhows which can carry around several fishermen. As communicated by Abdul Famau, a fisherman from Kizingitini: "We use a dhow to move from here to Kiunga, so it takes us two days to reach there. We first reach Kiwayu and spend the night then head to Kiunga the following day. I use fishing nets to catch fish."³⁵ According to a rope seller, the fishermen use ropes to tie the scrap of white cloth on the dhow and to tie the pillar that holds the cloth.³⁶ However, for those who can afford it, motorboats are the most efficient option in terms of saving time to and from the fishing sites. Moreover, the fishermen highlighted that, in carrying out the fishing, they would generally use fishing lines or nets to catch the fish.

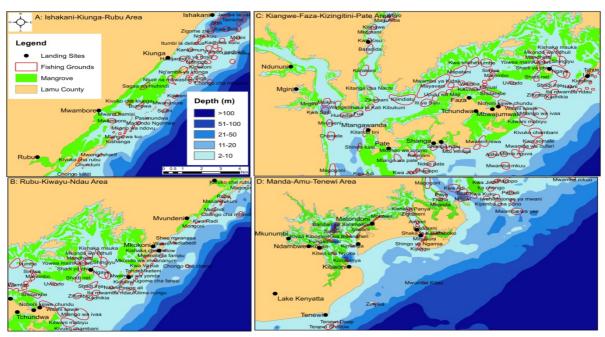


Image 7 Distribution of prominent fishing grounds frequented by artisanal fishers in Lamu County Source: Lamu Fisheries Department

2. Economic Importance of Fishing

Lamu County relies on fishing activity as the main economic activity and mainstay with some villages such as Kiunga and Kizingitini contributing to more than 90 percent of income and employment of the entire coastal fishing sector extending 640km.³⁷ Dependence on fishing within the Kiunga village, close to the Kenya-Somalia border, for example, has been clearly highlighted by the International Union for Conservation of Nature and Natural Resources. The Union indicates that, within the community, fishing contributes 95-100 percent of its inhabitants' livelihoods.³⁸

This was a widely echoed sentiment by every single interviewee - the economic importance of fishing for the livelihoods of Lamu's inhabitants cannot be understated. In fact, what made

³⁵ Video interview of Abdul Famau, Annex FR18.

³⁶ Video interview of Fatuma Mohamed, Annex FR25.

³⁷ Oddenyo R M *et al.*, Kenyan sharks baseline assessment report for the national plan of action for the conservation and management of sharks, *Kenya Fisheries Service*, 2018, 34, Annex FR17.

³⁸ Samoiyls M and Kanyange N, *Natural resource dependence, livelihoods and development*, 2008, 5, Annex FR14.

itself clear from the interviews is that the people of Lamu are nearly wholly dependent on fishing as their primary - if not sole - source of income. One of the interviewees, Ali Salim Waroi, highlighted that he had been a fisherman since 1975, and the menial income that he derives from this activity is what he has used to feed and educate his children.³⁹ Several of the interviewees expressed that there were multiple people depending on their fishing and the income from it.⁴⁰ Aidhar Omar Nasir explained: "I don't have any other job. Fishing is my job. I educate my children, take care of them and meet all my needs through fishing. [...]There are 10 people in every boat, and each is a bread winner to almost 30 people."⁴¹ Another of the fisher, Amina Ahmed Mohamed revealed that, in addition to her 5 children, her disabled mother also depends on her.⁴²



Image 8 Fishermen from Ishakani after fishing overnight Source: State Law Office of the Republic of Kenya

Fishing seems to be the source of livelihood that is resorted to, in part, because of the scarcity of other sources of employment in Lamu. This is regardless of whether one has received formal education or not according to Halima Mohamed, a businesswoman hailing from Rasini. ⁴³ One of the interviewees, Fatuma Mohamed, highlighted: "It doesn't matter whether you are learned or not. You may be learned but unlucky to get employment; where will you get a job? You will be forced to get into fishing to be economically independent and take care of your children. It's because we don't have any other source of livelihood." ⁴⁴ Another fisherman, Ahmed Islam, expressed that other sources of livelihood may not be viable, referring specifically to crops to yield any harvest when cultivated. ⁴⁵

Other than supporting the livelihoods of the fishermen and their direct dependents, fishing is seen to be a crucial economic activity in Lamu when looking at the different stakeholders

³⁹ Video interview of Ali Salim Waroi, Annex FR21.

⁴⁰ See, among others, video interview of Abdul Famau, Annex FR18 and video interview of Masou Abdalla Masou, Annex FR31.

⁴¹ Video interview of Aidhar Omar Nasir, Annex FR43.

⁴² Video interview of Amina Ahmed Mohamed, Annex FR22.

⁴³ Video interview of Halima Mohamed, Annex FR₂6.

⁴⁴ Video interview of Fatuma Mohamed, Annex FR25.

⁴⁵ Video interview of Ahmed Islam, Annex FR₂₀.

Annex 4

involved. Fatuma Mohamed, who is a rope seller, stated that fishermen place orders for her ropes in order to tie scraps of white cloth onto their dhows. She expressed, in light of this, that fishing has a significant effect on her livelihood as it provides her with sales of her ropes.⁴⁶

As previously mentioned, artisanal fishing is the dominant fishing activity in Lamu's fishing sector, contributing 8 percent of national production with commercial fishing contributing 20 percent of gross harvest. Artisanal fishery is the main level of fishing activity in Lamu County. Of the many artisanal fishermen in Lamu, a majority conduct their fishing in the northern region with over 50 percent of lobster fishing taking place in Kiunga.⁴⁷

The economic scope was comparatively more diverse in the past, ranging from farming, to logistics and tourism as reported by fishermen and inhabitants from all the BMUs congregating in Kiunga, Faza and Amu Town. However, the past decade has seen dramatic changes following insecurity at the border, forcing the agricultural and tourism sector to dwindle dramatically. Host villages between Kiunga and Mkokoni previously were agricultural hubs that have been left abandoned due to insecurity. Fishing employs the greatest number of people in the county with fish and other marine products constituting the largest proportion of food consumed, as will be discussed below. In some island villages such as Siu and Faza, fishing constitutes over 95 percent of commercial activities contributing to economic development. ⁴⁸ Based on conversations with fishermen in Lamu, the vast majority of fishing takes place in Kiunga.

Overall, the county seeks to increase the efficient use of resources to help transform the sub-sector from an artisanal/subsistence-based fishing economy to semi-industrial fisheries with the county reaping maximum benefits from its marine and other fisheries resources.⁴⁹

⁴⁶ Video interview of Fatuma Mohamed, Annex FR₂₅.

⁴⁷ Kimakwa E and Barabara M S, *A review of lobster fishery management in Kenya: a case study on the development of the rights–based fisheries management system (co-management)*, 2019, 8, Annex FR13.

⁴⁸ Food and Agriculture Organisation, Fishery and Aquaculture Country Profiles: Republic of Kenya, available at: http://www.fao.org/fishery/facp/KEN/en#CountrySector-SectorSocioEcoContribution (last accessed on 21 December 2020), Annex FR7.

⁴⁹ Lamu County, Lamu County Integrated Development Plan (2018-2022), 2018, 66-67, 78, Annex FR3.

3. Fish as a Major Dietary Staple



Image 9 A fisherman in Kiunga enjoys his catch of Red Snapper after using a dhow for fishing for the past 3 days

The fishing sector remains an imperative source of food to the 144,000 dwellers in Lamu county. The fishing ecosystem not only puts food on the tables of the inhabitants of Lamu County, but fish is in fact the main dietary staple and source of income for thousands of women who are fishmongers and cowrie collectors and traders. There is indeed a high local consumption of resources like lobster, crabs and prawns. ⁵⁰ . Artisanal fishing catch constitutes the primary natural resource and source of protein and livelihood for the Lamu people. ⁵¹ Almost all interviewees indicated that they eat fish every day, with fisherman Abdul Famau explaining that it is because it is readily available and being able to afford other meats is often not possible. ⁵² Khadija Maksudi, a food seller from Faza, expressed that the kind of fish that is eaten each day is dependent on what the fishermen catch. ⁵³ Ishakani fisherman Sharif Bwanaheri was adamant on the health benefits of fish, adding that it can even be fried and eaten at the beginning of one's day. ⁵⁴

⁵⁰ Heddon S, The Constraints of the Artisanal Fishing Industry in the Lamu District, 2006, 13, Annex FR8.

⁵¹ Heddon S, The Constraints of the Artisanal Fishing Industry in the Lamu District, 2006, 13, Annex FR8.

⁵² Video interview of Abdul Famau, Annex FR18.

⁵³ Video interview of Khadija Maksudi, Annex FR₂8.

⁵⁴ Video interview of Sharif Bwanaheri, Annex FR₃8.



Image 10 Fishermen from Ishakani with some of their catch Source: State Law Office of the Republic of Kenya

4. Fishing in Areas Around the Border

The fishing activities in Lamu not only support the larger coastal regions, but areas surrounding the Lamu archipelago attract fishermen from as far as Pemba in Tanzania. Lale Athman Lale, a fisherman, says that he has moved away from Malindi because income from fishing there was poor and is moving to Lamu and on a journey to Kiwayu to fish, where fishing income is better.⁵⁵

The fishermen have noted their closeness to the border when fishing, citing it as beneficial to the activity. Indeed, fishermen come from all over to fish in areas like Kiunga and Ishakani. One fisherman indicated that some come from Faza, Kizingitini, and even Malindi, to fish in the area. This is as a result of the rich fishing grounds in the area, a factor which was expressed severally throughout the interviews. ⁵⁶ The interviewees indicated that they catch a variety of fish in these areas, including parrot fish, king fish, fumi fish, red snapper and white snapper. ⁵⁷ One fisherman even lamented that there are no lobsters in other areas. Misbahu Ali Awadh, a retired Fisheries Department Officer, highlighted that there is more money to be made in areas around Kiunga because there are bigger fish and better prices. ⁵⁸ With regards to the sheer volume of fish available in areas like Kiunga, Sharif Bwanaheri noted that while in other areas the fishermen may catch 250kgs - 300kgs, when fishing at Ishakani near the border they may catch 500kgs - 600kgs or even up to one ton. ⁵⁹

It is for the reasons reflected above that fishermen often make the tedious journey to get to such areas to carry out their activities. Fisherman Issa Hassan, in indicating that 70 percent of his catch is from areas like Kiunga, noted that for him Kiunga is a 2-day journey by dhow. ⁶⁰ He explained that first he travels to Kiwayu, where he spends the night, then completes the

⁵⁵ Video interview of Lale Athman Lale, Annex FR29.

⁵⁶ See, among others, video interview of Misbahu Ali Awadh, Annex FR₃₂.

⁵⁷ See, among others, video interview of Khadija Maksudi, Annex FR₂8.

⁵⁸ Video interview of Misbahu Ali Awadh, Annex FR₃₂.

⁵⁹ Video interview of Sharif Bwanaheri, Annex FR₃8.

⁶⁰ Video interview of Issa Hassan, Annex FR27.

Annex 4

journey to Kiunga the next day. Even for those with motorised boats, it is no short journey. Fishermen have indicated that they use approximately 20 litres of fuel to reach Kiunga. Issa Hassan notes that it takes them 6 hours to reach Kiunga using a dhow and 3 - 4 hours for a motorboat engine. The fishermen also may spend months on end in areas like Kiunga in order to maximise on their catch, with Issa Hassan communicating that fishermen may spend up to three months away from home for purposes of fishing.

On estimate, about 80 percent of fish landing in Lamu County come from the disputed area with only 20 percent harvested elsewhere in various seasons and mostly encompassing fish that have a migratory nature such as tuna. According to several interviewed fishermen, the waters to the north produce more and better grade fish. That is why, for example, Abdul Famau explains that he mostly goes fishing in Kiunga because he can "make better income".⁶¹

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⁶¹ Video interview of Abdul Famau, Annex FR18.

B. Impact on Coastal Communities if Disputed Waters Were Awarded to Somalia



Image 11 A fisherman in Kiunga explains where he has been fishing for the past 60 years Source: State Law Office of the Republic of Kenya

<u>1. Impact on Fishing Communities of Restriction of Access to Current Fishing Areas and</u> Increased Insecurity

If the fishing community in Lamu County were restricted in their current access and historical areas, the effects would be devastating. Many of the fishermen fear that they could lose prime fishing spots the communities have identified over the centuries, reducing their household as well as individual incomes. Aidhar Omar Nasir, a fisherman, stated: "My life will crumble if I am barred. I won't be able to educate my children. I won't be able to afford food and pay for medical services." Another fisherman echoed this, expressing that, if fishing zones are lost, many people will suffer, and that most depend on fishing in some form or the other. He indicated that Lamu relies on the Kiunga economy because many go there to catch lobsters and fish generally, noting that many would lose their only source of livelihood.



Image 12 FGD of Women in Kiunga

Others, for example, Mwansomo Athman Arasin, expressed fears that people would resort to killing and stealing from each other were this source of livelihood taken from them.⁶³

In villages like Faza, fishing constitutes about 95 percent of the economic activity, while generally in villages like Kiunga fishing income holds about 85 percent of total community income. Most of the interviewed fishermen communicated their perspective that Kiunga does not have any other economic activity and that fishing helps them take care of their family. Other than income, these communities face a threat to their staple food source as the waters under dispute are among their main fishing spots - specifically fishing grounds near Kiunga, which have been shown to be prime fishing spots for the fishermen. Many of the interviewees bemoaned that they would be seriously affected because there may be little to no fish in areas other than these prime fishing spots. Fishermen project that the Lamu County harvest could dip by about 70 percent, leaving hundreds of thousands of people from

⁶² Video interview of Aidhar Omar Nasir, Annex FR43.

⁶³ Video interview of Mwanasomo Athman Arasin, Annex FR₃₅.

the county and the region without a source of this staple food. Many fishermen further expect a drop in prices as many middlemen would be unwilling to access the areas for fear of attacks, increased taxation and the general lack in the rule of law.

It is without doubt that insecurity in the neighboring Somalia has already affected the fishermen and their livelihood. Rising insecurity in the horn of Africa region due to instability in Somalia has particularly affected coastal communities in the border area. ⁶⁴ For example, border areas in the north, especially Kiunga, are affected by the political instability in Somalia and the "Shifta" problem. ⁶⁵ The Lamu CSP notes that attacks against settler communities linked to the Al-Shabaab terror group have negatively affected agro-production and commerce within the County. ⁶⁶ This necessarily affected the fisherman population, an example of which is the night fishing ban declared in 2011. ⁶⁷

The proximity to Somalia, the dense Boni forest that extends the entire length across the border, as well as the cross-border recruitment of some of the local youth into the Somalia-based Al Shabaab organisation have been among the reasons that Lamu County already faces a fragile economic growth future. The fear of continuous terrorist effects coming from Somalia had led to a reduction of traders venturing to villages such as Kiunga.

⁶⁴ Ministry of Transport, Environmental and Social Impact Assessment Study Report or Construction of The First Three Berths of The Proposed Lamu Port and Associated Infrastructure, 2013, 156-157, Annex FR5.

⁶⁵ Ministry of Transport, Environmental and Social Impact Assessment Study Report or Construction of The First Three Berths of The Proposed Lamu Port and Associated Infrastructure, 2013, 150, Annex FR5.

⁶⁶ Lamu County, Lamu County Spatial Plan (2016-2026), Volume II, 2017, 60, Annex FR6.

⁶⁷ Lamu County, *Lamu County Climate Risk Profile*, 2017, 8, Annex FR4.



Image 13 nature conservancy land cruiser drives thru the Boni Forest towards Kiunga village Source: State Law Office of the Republic of Kenya

As a result, fishermen have had to rely on boats which carry a lesser load: up to 2 tons as compared to trucks that would ferry up to 7 tons of fish. Worse still, the lack of cold stores results in the harvested fish having to be sold immediately, otherwise there is the risk of wastage due to their perishable nature. These factors further constitute already a more perilous financial situation for the fishermen in Lamu County.

If the disputed waters were awarded to Somalia, the restricted access to historic fishing grounds and increased insecurity would be the final nail in the coffin for commercial fishing, with many large boats likely to depart fearing hijackings for ransom as the current case across the border. During one site visit, a commercial fishing boat with 8 Moroccans was taken by a militia controlling parts of Somalia, with one sailor and the boat released after a one-week ordeal and a ransom of 1.2 million shillings while the rest of the crewmen remained in Somalia. The large fishing vessels will therefore not venture anywhere past the border where they can be assured of protection by the Kenyan authorities. In the same light, the border remains closed and therefore the Kenya Navy would not allow them to venture into Somali waters even if the crew was brave enough to risk their safety.



Image 14 Kiunga shore where traders interact load goods to boats to be ferried to Somalia

Local residents and leaders of Lamu County indicate that there would indeed be severe consequences of the dispute to the county's economy as well as the livelihood of its people. The Deputy Governor of the county has in fact emphasised the inherent value of the traditional fishing grounds to the people and the county's blue economy prospects at large. Indeed, the people of Lamu County would not survive such a loss. In fact, a potential loss of fishing grounds in Lamu County – owing to the fact that the disputed area overlaps some of Lamu County's richest fishing grounds near Kiunga – would necessarily impact traditional fishing. This will undermine the livelihoods of the majority of the community.

Many fishermen already hold this fear over increased insecurity following any restrictions. In fact, several fisherfolk expressed that they already face serious security threats when they fish near the border, having their equipment and fish confiscated and having to pay Kshs. 10,000 in order to proceed.⁶⁸ For example, Aidhar Omar Nasir stated: "The Somali once captured us and took away our fish and money in Kenyan territory which is not even their home. If they take away our border, where will we go? And yet your job is fishing and we rely on this area and the border areas? There are almost 40 fishing zones here where people use fishing lines. [...] Where will they all go?"⁶⁹ Mujahid Mohamed Mujahid expressed his fears over potential insecurity, communicating the risk that he perceives surrounding potential attacks and gun violence. Indeed, pervasive insecurity from Somalia hinders traditional fishing activities in areas near any disputed zones and inevitably constrains economic prospects associated with exploitation of fisheries by large scale industrial fishing fleets. One of the several – arguably constraining – methods to curb this insecurity came in the form of a security precaution whereby Kenya suspended fishing activities off the coast near the Somali border. As has been reflected in this report, as well as indicated in certain studies, there is great potential for the upwelling area near Kenya and Somalia as one of the rich fishing grounds of the Western Indian Ocean. The security precautions employed, while in good faith, may have the unintended consequence of limiting catches from local fishing fleets as well as Distant Water Fishing (DWF) fleets. These fishing communities that have

⁶⁸ Video interview of Aidhar Omar Nasir, Annex FR₄₃.

⁶⁹ Video interview of Aidhar Omar Nasir, Annex FR43.

historically and culturally depended on fishing for their livelihoods will surely suffer a great loss if the disputed waters were granted to Somalia.

2. Impact on Conservation Efforts

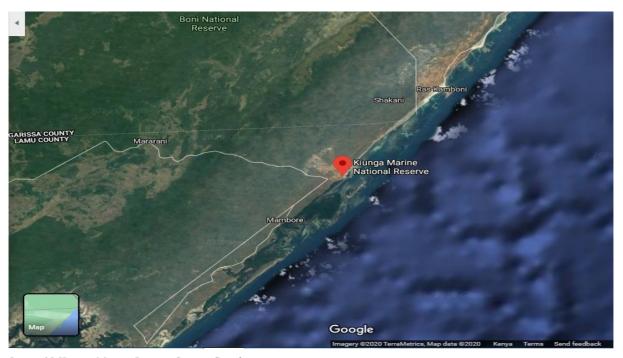


Image 15 Kiunga Marine Reserve Source Google

IUU fishing is a major issue that risks worsening if the disputed waters were granted to Somalia. Indeed, the FAO explains that "[i]n the marine sector, one issue is the control of foreign flag vessels that are fishing tuna in the Exclusive Economic Zone and where IUU fishing is known to occur."⁷⁰ This phenomenon is particularly known to occur in Somalia. A 2015 report on fisheries in Somalia shows that 8 of the 17 fish groups that were analysed are currently fished at unsustainable levels, which is almost half of all the analysed fish groups.⁷¹ It is clear that Somalia does not have the ability to patrol waters and prevent IUU fishing, especially from large foreign fishing vessels operating in deep waters. Thus, if the maritime border changes, IUU fishing will only worsen. This will lead in turn to a shortage of available fishing resources for the local communities of Lamu County due to the uncontrolled overexploitation. The FAO understands that "IUU fishing can lead to the collapse of a fishery or seriously impair efforts to rebuild stocks that have already been depleted."⁷² In other words, thousands of traditional fishermen and fisherwomen and their families, who depend on those waters' fishing stocks, will be left with nothing. This will also impact other economic actors in the fishing Industry.

⁷⁰ Food and Agriculture Organisation, Fishery and Aquaculture Country Profiles: Republic of Kenya, available at: http://www.fao.org/fishery/facp/KEN/en#CountrySector-SectorSocioEcoContribution (last accessed on 21 December 2020), Annex FR7.

⁷¹ Glaser S M et al., Securing Somali Fisheries, One Earth Future Foundation, 2015, 78, Annex FR15.

⁷² International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, *UN FAO*, 2001, 1, Annex FR16.

Kenya has engaged in significant conservation efforts. By doing so, it has protected its fishing resources and the interests and well-being of its fishing coastal communities for many years. For example, it has established marine conservation areas such as the Kiunga Marine National Reserve early in 1979, ⁷³ as well as a number of marine protected areas aimed at protecting and conserving marine and coastal biodiversity. ⁷⁴ In addition, the implementation of the system of BMUs by Kenya helps to ensure that artisanal fisheries are correctly and efficiently managed. The BMUs also help preventing overexploitation of fishing resources. Their objectives include compliance with regulations, alleviation of poverty, and sustainable development of the fishery sector. ⁷⁵

For conservation purposes, there is a widely shared fear that, if Somalia is granted the disputed waters, there will be increased impunity for illegal fishing and pollution that will jeopardise Kenya's conservation efforts and coastal communities. The Lamu Archipelago is home to a rich and varied biodiversity. Areas such as the Kiunga protected marine reserve contain invaluable marine habitats. The Kiunga marine reserve is an area conserved by Kenyan authorities that gives shelter to protected sea turtles and dugongs. Kenya is home to all five types of sea turtles. Three of these species, namely the green turtles (94 percent of turtle population), the hawksbill turtles and the olive ridley turtles, nest in Kenya. The other two species, the leatherbacks turtles and the loggerheads turtles, use Kenyan waters as for aging grounds. All the various species of sea turtles are found with the 20m isobath associated with sea grass and coral reefs.

The rich biodiversity in these reserves have continued to attract tourists who come to witness the teeming sea life in the coral reefs, seagrass and extensive mangrove forests. This conserved area holds a huge potential for windsurfing, diving and snorkeling, water skiing and sunbathing.

⁷³ Samoiyls M and Kanyange N, *Natural resource dependence, livelihoods and development*, 2008, 7-8, Annex FR14.

⁷⁴ Oddenyo R M *et al.*, Kenyan sharks baseline assessment report for the national plan of action for the conservation and management of sharks, *Kenya Fisheries Service*, 2018, 28, Annex FR17.

⁷⁵ Samoiyls M and Kanyange N, *Natural resource dependence, livelihoods and development*, 2008, 23, Annex FR14.

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The park, which is 270 square kilometres (100 sq. mi), covers an area with approximately 50 islands and coral reefs in the Lamu Archipelago all the way to the Kenya-Somali border. It also borders the Boni and Dodori National Reserves. On the Kenyan side, conservation efforts are ongoing with the efforts directed at both terrestrial and marine aspects through various government and non-government agencies and through a combined effort basis. One such non-governmental body that has put considerable input in conserving the environment is the Kiunga Conservancy, named after the nearby Kiunga division home to over 12,000 residents.



Image 16 A conservationist examines a fisherman's catch at the Kizingitini landing site Source State Law Office of the Republic of Kenya

The conservancy created to protect sea animals and plants has evolved from supplying water tanks to providing nets and equipment to access the deep seas, carrying out of sea surveys and ensuring sustainable use of resources. In one case, the conservancy attributed continued overfishing of certain species of fish to overreliance of certain equipment and vessels, such as wind powered dhows resulting to the decision to provide modern vessels and equipment (under the exchange gear program) that can access the deep seas and harvest the decrease the fishing of immature fish. As a result, over ten engines were provided directly improving the income of over 300 fishermen, with the artisans now delving into deeper waters an especially accessing the pelagic fishing routes.

Pelagic fish, according to the environmentalists, face no danger of overfishing due to their migratory nature with schools of fish using these routes frequently. The women fisher-folk have also benefited from fishing boats, which allow them to carry out fishing activities without conflict with the local culture that restricts mixing of the two genders. In other areas,

Annex 4

especially beaches, the conservancy has cleaned these landing sites for various species, from plastic waste that had led to a decrease in animals coming to breed on these beaches. Since the commencement of conservation efforts, there have also been over 15,000 mangrove trees planted, with thousands more natured and protected from destruction given their importance as breeding grounds, habitats and providing oxygen to the environment.

The ocean surveys have provided critical data on areas suitable for fishing, including identification of depleted regions. Further, such data allows fishermen to identify new fishing grounds, as well as provision of free advisory services on which methods of fishing are suitable. These efforts, however, continue to face various challenges, including the one-sided conservation of endangered migratory species, which make the hard work less rewarding. In many instances, endangered species that had been under watch of conservationists have been harvested and consumed as food across the border, leading to an increased need for cross-border cooperation. Already, the Kiunga Conservancy reported that they had reached out to potential partners in Somalia to help with conservation activities. In Somalia itself, there has been high but (un-quantified) level of green turtle fishing, typically using shark gill netting. They warn that any gains made over the years could be easily erased if they were unable to carry out their work effectively.

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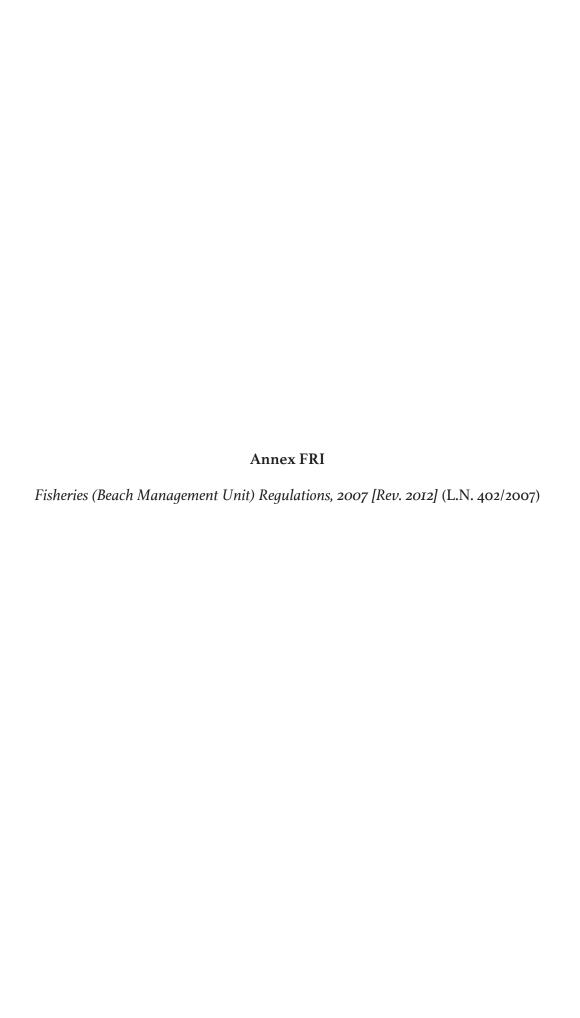
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FISHERIES (BEACH MANAGEMENT UNIT) REGULATIONS, 2007

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FISHERIES (BEACH MANAGEMENT UNIT) REGULATIONS, 2007

[L.N. 402/2007.]

PART I - PRELIMINARY

1. Citation

These Regulations may be cited as the Fisheries (Beach Management Units) Regulations, 2007.

2. Interpretation

In these Regulations, unless the contest otherwise requires—

"assembly" means a meeting of registered members of a beach management unit convened pursuant to the provisions of these regulations;

"authorized fisheries officer" means a person of or above the rank of assistant fisheries officer appointed in the public service, having administrative jurisdiction over a beach management unit;

"beach" means the defined geographical area of jurisdiction of a beach management unit established under regulation 5;

"beach management unit" means an organization of fishers, fish traders, boat owners, fish processors and other beach stakeholders who traditionally depend on fisheries activities for their livelihoods:

"by-laws" means the internal administrative rules of a beach management unit approved by the assembly and the authorised fisheries officer;

"chairman" means the chairman of the assembly and executive a committee of a beach management unit elected in accordance with these regulations;

"co-management plan" means a plan for the co-management of a particular fishery or geographical area adopted pursuant to regulation 7;

"Director" means the Director of Fisheries;

"executive committee" means a committee of beach management unit members elected en office pursuant to the provisions of regulations 14 and 15;

"fish landing station" means a fish landing station established by the director in accordance with the provisions of the Act;

"member" means a member of a beach management unit; and

"presiding officer" means the authorised fisheries officer or any other person nominated by him in writing to supervise or conduct beach management unit elections.

PART II - BEACH MANAGEMENT UNIT OBJECTIVES STRUCTURE, AREA OF JURISDICTION AND MANDATE IN CO-MANAGEMENT

3. Objectives

(1) The Director shall facilitate the establishment of a beach management unit for each fish landing stations.

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Provided that in appropriate cases one beach management unit may be set up for two or more fish landing stations in accordance with administrative guidelines issued by the Director.

- (2) The beach management unit shall be a son-political and nonreligious body.
- (3) The objectives of a beach management unit shall he to-
 - (a) strengthen the management of fish-landing stations, fishery resources and the aquatic environment;
 - (b) support the sustainable development of the fisheries sector;
 - help alleviate poverty and improve the health, welfare and livelihoods of the members through improved planning and resource management, good governance, democratic participation and self-reliance;
 - recognise the various roles played by different sections of the community, including women, in the fisheries sector;
 - (e) ensure the achievement of high quality standards with regard so fish and fishery products;
 - build capacity of the members for the effective management of fisheries in collaboration with other stakeholders; and
 - (g) prevent or reduce conflicts in the fisheries sector.

4. Administrative structure

A beach management unit shall consist of-

- (a) an assembly;
- (b) an executive committee; and
- (c) such sub-committees as may be specified in the by-laws of the beach management unit.

5. Beach management unit's area of jurisdiction

- (1) Each beach management unit shall have jurisdiction over the area for which it is established under rule 3.
- (2) The Director shall, is consultation with the relevant agencies, prior to the establishment of a beach management unit, cause the relevant land area of a fish landing station to be surveyed and its boundaries clearly delineated and marked.
- (3) For the purpose of ensuring safety of fish and fishery products, a specific area of the fish landing station shall be delineated, marked and assigned for the exclusive purposes of landing and selling fish and fishery products.
- (4) Activities not directly related to fish landing or trading in fish and fishery products that are, or have been, customarily undertaken at that beach, including, bus not limited to—
 - (a) the washing of clothes;
 - (b) the watering of cattle;
 - (c) the abstraction of water for domestic use, and
 - (d) the provision of services for the purposes of tourism or recreation,

shall he assigned a separate area of the beach away from the area provided for under paragraph (3) above.

(5) A description of the beach, which shall include a plan and a geo-reference description of any area identified for the exclusive purpose of landing or selling fish and fishery products, shall be included in the by laws of each beach management unit.

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- (6) A beach management unit shall be entitled to issue by-laws which shall be binding upon its members and any persons present at or using the beach.
- (7) A beach management unit may stipulate in its by-laws that specified activities as its beach may only be undertaken by its members or by members of other beach management units in accordance with any applicable co-management plan.
- (8) A beach management unit shall exercise its jurisdiction over a beach in a fair, equitable and non-discriminatory manner.
 - (9) A beach management unit shall display in a prominent location on the beach—
 - a notice stating that the beach is managed by the beach management unit, which shall be identified by name; and
 - (b) a copy of its by-laws.

6. Mandate of a Beach Management Unit

- (1) A head, management unit shall be responsible to its members and to the Director for ensuring the orderly, safe and effective use, management and operation of the fish landing station over which it has jurisdiction, to which end it shall—
 - ensure that the fish landing station, together with any structures or buildings situated thereon, is kept in a clean, tidy and hygienic condition;
 - (b) ensure the security of the fish landing station and any fishing vessels, nets or other equipment or structures within its boundaries;
 - (c) ensure compliance with applicable hygiene standards in connection with the landing storage and sate of fish and fishery products;
 - (d) in conjunction with other relevant agencies maintain safety and order at the fish landing station; and
 - (e) maintain and, as necessary, repair any buildings or structure on the fish landing station.
- (2) A beach management unit shall gather, analyse, use, store and transmit such information and data as may be specified in writing by the Director from time to time concerning the landing and sale of fish and fishery products, including, but not limited to—
 - (a) the quantities of fish and fishery products landed; and
 - (b) the prices at which they are sold.
- (3) A beach management suit shall seek to ensure the safety of those of its members engaged in fishing, and, to that end—
 - shall monitor the seaworthiness of fishing vessels, and shall take measures
 to ensure that they comply with applicable safety regulations including
 provisions relating to the use of personal safety equipment; and
 - (b) may organise or provide rescue vessel(s) or services.
- (4) A beach management unit shall take measures to raise the awareness of its members and their families concerning health risks and measures so minimise and prevent to malaria and HIV-Aids and other diseases.
- (5) A beach management unit may provide training to its members is fishing techniques, the marketing and processing of fish, personal financial management and other areas relevant to fisheries and shall support the activities of cooperatives and fishers' self help groups within its jurisdiction.

- (6) A beach management unit may seek to regulate and promote the marketing of fish including the construction and supply of marketing facilities and the organisation of fish auctions but shall not in any circumstances have the right to determine or dictate the prices at which fish or fishery products are to be sold.
- (7) A beach management unit may, with the written permission of the Director, erect such structures or buildings as may be necessary for the discharge of its functions.
- (8) A beach management unit may is order to improve the economic situation of its members—
 - (a) promote and facilitate investments in she fish landing station and in fishing activities undertaken from there:
 - (b) support the development of sustainable alternative livelihood strategies for its members that may reduce pressure on fishery resources including, but not limited to, the provision of sustainable services to tourists.
 - (9) A beach management unit may-
 - organise, or facilitate the supply of fishing gear, ice or other necessary equipment or inputs to its members; and
 - (b) provide savings and credit facilities to its members.

but it may not offer these services in competition to similar or equivalent services that are already provided at that beach.

7. Co-management areas

- (1) The authorised fisheries officer shall, following a consultative process, designate at respect of each beach management unit a co-management area which shall be an area in which the beach management unit shall undertake fisheries management activities jointly with the Director.
- (2) In the case of fisheries or areas in which fishing is undertaken by the members of more than one beach management unit, the authorised fisheries officer shall, following a consultative process, designate a joint co-management area in which more than one heath management unit shall share responsibilities for fisheries management with the Director.
- (3) The Director shall in the circumstances specified in paragraph (2) designate areas in which each individual participating beach management unit shall have specific responsibilities particularly as regards the undertaking of patrols.
- (4) Following the designation of a co-management area the authorised fisheries officer shall, in consultation with relevant beach management units, develop a draft co-management plan for that co-management area, specifying fisheries management measures that are to be taken to ensure the sustainable utilization of fisheries in that area, including, but not limited to—
 - the designation of closed areas in which all fishing activities or specified fishing activities are prohibited;
 - (b) the designation of closed seasons either throughout the Co-management area or in respect of specified areas;
 - (c) the marking of fishing vessels;
 - (d) restrictions on the type of nets or other fishing gears that may be used; and
 - (e) restrictions on the number of fishing vessel licences or fishing licences that may be issued.

- (5) Each co-management plan shall be agreed upon between the authorised fisheries officer and the beach management unit and shall—
 - (a) give effect to applicable national and regional policies and plans, and
 - (b) comply with existing fisheries legislation, and
 - (c) specify the roles and responsibilities of the concerned beach management unit or units and the Director with regard to its implementation and enforcement.
- (6) The authorised fisheries officer shall forward the co-management plan to the Director for approval.
- (7) A beach management unit shall give effect to an agreed co-management plan through its by-laws.
- (8) A beach management unit shall constitute a patrol sub-committee who shall in collaboration with the Director undertake regular patrols within the co-management area, or within the designated patrol area in the case of a joint co-management area, in order to ensure compliance with the Act and any applicable co-management plan and applicable by-laws.
- (9) The authorised fisheries officer and the executive committee(s) of the concerned beach management unit or units shall supervise the implementation of the co-management plan and shall periodically review its contents and revise it as necessary.
- (10) If the authorised fisheries officer suspects that a beach management unit is not taking sufficient steps to give effect to a given co-management plan, such officer shall consult with that beach management unit as so the reasons for this.
- (11) If, following consultations, the authorised fisheries officer is of the opinion that the relevant beach management unit is still failing to take sufficient steps to give effect to the comanagement plan such officer may serve a notice to show cause why that co-management plan should not be revoked and if—
 - (a) the relevant beach management unit, fails to show cause within 14 days of the date of receiving the notice; or
 - the authorised fisheries officer is not persuaded by the response of the beach management unit,

he may suspend or cancel the co-management plan and after notifying the beach management unit or units concerned in writing he shall forward his decision to the Director who shall within 14 days approve or vary the decision.

- (12) A beach management unit that is aggrieved by a decision to suspend or cancel a co-management plan pursuant to paragraph (11) of this regulation may within 14 days of the date of notification appeal to the Director, whose decision shall be final.
- (13) The executive committee of a beach management unit whose co-management plan has been cancelled shall stand suspended and an interim Committee put in place pursuant to the provisions of regulation 21.

8. Environmental protection

- (1) A beach management unit shall seek to protect the aquatic environment within its co-management area and shall cooperate with the responsible authorities to that effect.
- (2) A beach management unit may include in its by-laws provisions concerning the protection of the aquatic environment in its co-management urea.

PART III - MEMBERSHIP OF A BEACH MANAGEMENT UNIT AND ELECTIONS

9. Membership

- (1) Membership of a beach management unit shall be open to those persons who—
 - (a) depend directly or indirectly for their income or livelihoods on fisheries activities undertaken at the beach within the jurisdiction of that beach management unit;
 - (b) fall within one of the membership categories specified in regulation to; and
 - (c) would be directly adversely affected by the temporary or permanent closure of fisheries activities at that Beach.
- (2) A beach management unit may provide in its by-laws that specified activities at the fish landing station over which it has jurisdiction may only be undertaken by its members.
- (3) A person shall not be simultaneously a member of more than one beach management unit.
- (4) A body corporate, acting through a representative notified in writing to the executive committee, may be a member of a beach management unit.
- (5) In the case of a jointly owned fishing vessel, the co-owners shall determine who between them is to be a member of the beach management unit to represent their interests, and shall jointly notify the executive committee accordingly.
- (6) Persons below the age of 18 years shall not under any circumstances be eligible to be registered as beach, management unit members and shall not be assigned any duties therefor.

10. Membership categories

- (1) A beach management unit shall have the following categories of members—
 - (a) boat owners, meaning the owners of fishing vessels registered at its beach;
 - (b) Crew members meaning such persons other than boat owners whose fishing licences authorise them to fish from its beach; and
 - (c) "fish traders and input suppliers" meaning persons routinely involved in fish trading or the supply of inputs and services necessary for fishing at its fish landing station.
- (2) For the purpose of this regulation "persons involved in fish trading include—
 - persons who engage in the dealing of fish for sale locally on the basis of a fish trader's licence;
 - (b) persons who engage in the dealing of fish for sale to a person or persons outside the district on the basis of a fish trader's licence;
 - (c) persons who supply fishing gears, bait, ice or other inputs to boat owners in return for a first claim on landed fish and fishery products which they then sell on:
 - (d) persons who purchase fish at the beach for processing and sale at the beach or in the vicinity of the beach on the basis of a fish trader's licence;
 - agents or representatives of persons engaged in the large scale processing; of fish on the basis of a fish traders licence, whether or not employed by such processors; and
 - (f) persons involved, whether as employees or otherwise, in the grading, sorting, valuing, packing, and portaging of fish at that beach.

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- (3) For the purpose of this regulation "persons involved in the supply of inputs and services necessary for fishing" include fishing vessel builders and repairers and net repairers.
- (4) Where a person's membership of a beach management unit is dependent on that person holding a licence—
 - (a) a suspension of that licence shall have effect of his right in membership of the beach management unit for an equivalent period;
 - (b) a revocation of that licence shall have the effect of revoking his right to membership of the beach management unit.

11. Joining Procedure

- (1) A person who wishes to apply for membership of a beach management unit shall apply in writing to the concerned executive committee.
- (2) The executive committee shall forward such applications to the authorised fisheries officer for approval.
- (3) If the authorised fisheries officer does not object to the application within 14, an applicant who complies with the criteria set in regulation 10 shall upon payment of the specified fee be admitted to membership of the beach management unit through the inclusion of his name in the register of members and the allocation of a member.
- (4) A person not holding a licence whose entitlement to membership of a beach management unit would require him to hold such a licence may apply for provisional membership of a beach management unit.
 - (5) An applicant shall be entitled to be granted provisional membership unless—
 - (a) such person has previously been expelled from that or another beach management unit;
 - (b) the relevant co-management plan specifies a maximum limit on the number of licences to be issued at that Beach which maximum limit has been reached; or
 - (c) the person has a criminal record.
- (6) In the event that there are more applications for provisional membership than there are available licences pursuant to the relevant co-management plan, such applications shall be dealt with on an equitable basis giving priority to the poor and disadvantaged and those with families to support in the BMU jurisdictional urea of the beach management unit.
- (7) The Director shall not issue a licence to a person that relates to a particular Beach unless that person is a member or a provisional member of the relevant beach management unit.
- (8) Following the grant of a licence to a provisional member that member shall notify the executive committee, which shall admit him to full membership through the inclusion of his name in the register of members and the allocation of a member registration number and membership card.

12. Resignation and expulsion of a member of beach management unit

(1) A member of a beach management unit may resign his membership at any time by notifying the executive committee in writing, but such resignation shall not affect the liability of that person to pay any outstanding fees or charges to the beach management unit.

- (2) A person may be expelled from membership of a beach management unit by a decision of the assembly on the proposal of the executive committee on one or more of the following grounds—
 - (a) he has been convicted in a court of law of a fisheries related offence:
 - (b) he has been convicted in a court of law of any other criminal offence and sentenced to imprisonment for a period exceeding six months; or
 - (c) he has persistently engaged in behaviour contrary to the objectives of the beach management unit or its by-laws and has ignored three written cautions issued by the executive committee.
- (3) The dismissal of a member shall be approved by a simple majority of the beach management unit members in a meeting duly convened by the chairperson.
- (4) Following the expulsion of a person from a beach management unit, the Director shall cancel any licence, registration or permit held by him that relates to the relevant beach.
- (5) A person who has been expelled from a beach management unit may not be readmitted to membership for a period of two years from the date of the expulsion.
- (6) A person who is aggrieved by a decision to expel him from a beach management unit may appeal in writing to the Director within a period of 14 days of the date of the expulsion, and the decision of the Director shall be final.

13. Rights and obligations of beach management unit members

- (1) A member of a beach management unit may—
 - (a) participate in the decision making processes of the beach management unit;
 - (b) where the member is not in arrears concerning fees or charges due to the beach management unit, stand for office and participate in elections;
 - (c) benefit from any services provided by the beach management unit to its members subject to the payment of any fee or charge; and
 - (d) inspect the books and records required to be maintained by the beach management unit.
- (2) A member of a beach management unit shall—
 - (a) comply with the by-laws;
 - (b) comply with the provisions of the Fisheries Act (Cap 378);
 - (c) ensure that any licences issued to him under the Act are kept up to date;
 - (d) comply with the lawful instructions of an authorized fisheries Officer or an official of the beach management unit;
 - (e) promptly pay any fees or charges due to the beach management unit;
 - (f) not damage any property owned or used by the beach management unit;
 - (g) promptly provide information to the beach management unit regarding the landing or sale of fish and fishery products as may be requested.

14. The executive committee

(1) The executive committee of a beach management unit shall have not lets than 9, nor more than 15 members as provided for in its by-laws, who shall be elected by the members of the beach management unit.

- (2) The composition of an executive committee shall be specified in the by-laws of each beach management unit, which may provide—
 - (a) that the membership shall be distributed as follows—
 - (i) boat owners 30%;
 - (ii) crews 30%;
 - (iii) traders 10%;
 - (iv) others 30%,
 - (b) that not withstanding subparagraph (a), in as far as possible at least 3 of the executive committee should be constituted by women.
- (3) It shall be the duty of each member of the executive committee to seek to represent the best interests of the beach management unit as a whole in the fulfilment of his duties rather than the interests of the membership category to which he belongs.
- (4) The executive committee shall consist of a chairperson, a deputy chairperson, a secretary, a treasurer and committee members.

15. Election to the executive committee

- (1) A member of a beach management unit may be nominated to stand for election to the executive committee provided—
 - (a) he is a citizen of Kenya and holds a National Identity Card or valid passport or driving licence;
 - (b) with the exception of candidates for the elections that take place at the establishment of the beach management unit, he has been a member of the beach management unit for more than one year;
 - (c) he is of sound mind;
 - (d) he does not have a criminal record;
 - (e) he has not been found to have breached the by-laws or rules of the beach management unit;
 - (f) he does not owe any outstanding fees or charges to the beach management unit;
 - (g) his candidacy is proposed and seconded by ten other members of the beach management unit who shall be in the same membership category in FORM FD/NF/1 as set out in the Third Schedule of these Regulations;
 - (h) he is able to read and write, except for the secretary and treasurer who must possess at least a primary education certificate.
- (2) The presiding officer shall announce the start of campaign period of not more than seven clear days before the date of the election.
 - (3) A beach management unit shall specify in its by-laws whether—
 - (a) candidates are to stand for direct election to the positions of chairperson, deputy chairperson, secretary and treasurer; or
 - (b) whether they are to stand for election to the executive committee with elections to such positions being undertaken by and from among the members of the executive committee.
 - (4) Elections to the executive committee shall be by secret ballot.
- (5) Upon counting and announcing the election results the presiding officer shall immediately submit the results to the Director in FORM FD/ ER as set out in the Fourth Schedule of these Regulations.

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- (6) A member of the executive committee-
 - (a) shall hold office for one further term:
 - (b) may stand for re-election for a second four-year term;
 - (c) may not stand for re-election immediately at the end of a second term, but may stand again for election since leaving office after four years.

16. Formation of and election to sub-committees

- (1) A beach management unit shall, through us by-laws, provide for the establishment of sub-committees depending on its particular requirements.
- (2) Ordinary members of the executive committee shall be elected by the executive committee to head the sub-committees so created.
- (3) The assembly through a voting method determined by the authorised fisheries officer shall elect members to serve in the sub committees.
- (4) The chairperson of the executive committee shall be an *ex officio* member of all sub-committees

PART IV - ADMINISTRATION OF THE BEACH MANAGEMENT UNIT

17. Meetings of the beach management unit members

- (1) A meeting of the Beach Management Unit members convened pursuant to the provisions of these regulations shall constitute the assembly of the beach management unit.
- (2) The assembly shall be held at least once a every three months, at an annual general meeting or more frequently as may be specified in the by-laws.
- (3) Additional meetings of the beach management unit members may be called by the executive committee when necessary and shall be called at the written request of one tenth of the members of the beach management unit.
- (4) The by-laws shall specify whether decision making at the assembly shall take place by—
 - (a) show of hands;
 - (b) show of hands, save for elections which shall be by secret ballot;
 - show of hands, or by secret ballot in particular cases upon the decision of the assembly; or
 - (d) secret ballot.
 - (5) Each participant in the assembly shall be entitled to one vote.
- (6) Unless it is otherwise provided for in these regulations, a proposal to the assembly shall be deemed to have been accepted it if is approved by more than half of those present.
 - (7) The quorum of an assembly shall be half the total numbers of members.
- (8) An assembly where quorum is not achieved shall be adjourned for a period of not more than ten days.
- (9) The assembly shall be chaired by the chairperson of the executive committee or in his absence the deputy chairperson of the executive committee.
- (10) On the decision of the chairperson, persons who are not members of the beach management unit or who are beach management unit members but are not entitled to vote in its meetings may be invited to address the assembly.

(11) The authorized fisheries officer or any person delegated by him shall be entitled to attend the assembly.

18. Convening the assembly

- (1) The executive committee shall, at least 30 days before convening the assembly display a notice prominently at the beach, at the offices of the beach management unit and other public places in the vicinity as will enable beach management unit members to be aware of the planned assembly.
- (2) A notice of the type referred to paragraph (1) shall indicate the date, time and place of the assembly and the draft agenda of the assembly.

19. Meetings of the executive committee

- (1) The executive committee shall meet at least once a month.
- (2) The quorum for meetings of the executive committee shall be at least half of the members.
- (3) Decisions of the executive committee shall be made by consensus, failing which a vote may be held with each member holding one vote.
- (4) Additional meetings of the executive committee may be called by the chairperson when necessary and shall be called at the request of one third of its members.
- (5) An authorised fisheries officer or a person nominated in writing on his behalf shall have the right to attend meetings of the executive committee as an observer.

20. Dismissal of executive committee members by the assembly

- (1) The assembly may dismiss a member of the executive committee, or any sub-committee, on the grounds that he—
 - (a) is proven to be of unsound mind;
 - (b) has failed without reasonable cause to attend three consecutive scheduled meetings;
 - (c) has engaged in or condoned illegal fishing activities;
 - (d) has failed to perform the duties required of his office as specified in these regulations or the by-laws; or
 - (e) is convicted of a criminal offence.
- (2) An assembly to consider the dismissal of any member of the executive committee shall be convened in response to a written request signed by one-third of the beach management unit members, citing the grounds for dismissal.
- (3) A decision to dismiss a member of the executive committee shall be taken by secret ballot requiring a simple majority of votes in favour of dismissal, and shall he confirmed by the authorised fisheries office in writing.
- (4) A member of the executive committee who has been dismissed pursuant to subsection (1) of this regulation may within 14 days of the relevant assembly appeal in writing by notice to the Director stating the basis for the appeal.
- (5) The Director shall determine any such appeal within 14 days by of receipt of the notice of appeal and shall promptly inform the beach management unit and the authorised fisheries officer.

In the event that or more two-thirds or more of the executive committee is dismissed from office by the assembly, then the entire executive committee shall stand dissolved and the authorised fisheries officer shall appoint an interim committee and call for fresh elections within ninety days of the dismissal.

21. Suspension of the executive Committee by the Director

- (1) The Director or an authorized fisheries officer, having reason to believe that an executive committee or any of its members are engaged in or are condoning proscribed fishing practices, shall immediately in writing suspend the committee or the member and in their place appoint an interim committee or an interim committee member.
- (2) When an authorized fisheries officer, other than the Director, makes such suspension, the officer shall report the case in writing detailing reasons for the suspension to the Director.
- (3) Any committee or committee member aggrieved by the decision of an authorized fisheries officer may, within fourteen days of communication to them of such suspension, appeal so the Director.
- (4) The Director may confirm, vary or reverse the decision, and shall accordingly issue instructions to the authorized fisheries officer.
 - (5) The decision of the Director under paragraph (4) shall be final.
- (6) If the Director recommends dismissal then the authorized fisheries officer shall call for fresh elections to replace the committee or committee member so removed within ninety days of the Director's decision.
- (7) The dismissed executive committee or individual committee thereof member shall return she authority card issued under these Regulations to the issuing officer.

22. Employees of the beach management unit

- (1) A beach management unit may employ such part time or full time staff as it requires in accordance with its approved budget including, but not limited to, a manager, an accountant, a coxswain, security personnel and cleaners.
- (2) An employee of a beach management unit shall not be entitled to stand for elected office in that beach management unit

PART V – RESPONSIBILITIES OF THE BEACH MANAGEMENT UNIT ORGANS AND OFFICERS

23. Responsibilities of the assembly

- (1) The responsibilities of the assembly of a beach management unit shall be to—
 - (a) approve any management plan for the beach;
 - (b) approve any draft co-management plan;
 - (c) approve the draft badges and work-plan of the beach management unit;
 - (d) adopt the annual report and accounts of she beach management unit;
 - approve she level of any fees or charges payable by the members of the beach management unit;
 - (f) adopt sew by-laws and amend existing by-laws;
 - (g) elect the members of any sub-committees;
 - (h) as necessary remove from office she members of the executive committee: and
 - undertake such other tasks as may be specified in these regulations or the by-laws.
- (2) The assembly of a beach management ant shall not seek, either directly or indirectly, to interfere in, re-order or otherwise modify economic relationships between members who are in different membership categories.

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- (3) With regard to the adoption and amendment of by-laws-
 - (a) any amendments to the by-laws approved at the date of establishment of she beach management unit shall enter into effect only on receipt of the Director's written approval;
 - (b) a copy of any additional by-laws, or any amendments thereto, shall within 14 days of the date of adoption be transmitted to the Director for approval;
 - if the Director does not respond within 21 days of the date of receipt of the by-laws then the by-laws shall be deemed to have been approved;
 - (d) the Director may within 21 days of the date of receipt notify the relevant beach management unit in writing that he does not approve the by-laws or amended by-laws, stating the reasons for his decision, in which case they shall be suspended.
- (4) The Director may only refuse to approve by-laws or amended by-laws submitted to him on the grounds that—
 - they are not in compliance with the Fisheries Act (Cap. 378), these regulations or any other legislation then in force;
 - (b) they in his/her opinion frustrate the objectives of the beach management unit.
- (5) Within 14 days of the receipt of a notice pursuant to subparagraph (4)(d) of this regulation a beach management unit may appeal in writing to the Minister, whose decision thereon shall be final.

24. Responsibilities of the executive committee

The duties of the executive committee shall be-

- (a) to supervise the general management of the beach management unit's activities and the implementation of its by-laws;
- (b) to approve the minutes of its previous meetings;
- (c) to supervise and review the implementation of the co-management plan;
- (d) to represent the beach management unit in relationships with unit;
- (e) to convene and prepare for the assembly, including the preparation of the agenda;
- (f) to review applications for admission to the beach management unit and resignation from it and to make recommendations to the assembly regarding the expulsion of members;
- (g) to submit the draft co-management plan and any rules to the assembly;
- (h) to submit the draft budget to the assembly;
- (i) to conclude contracts in accordance with the approved budget and plans;
- (j) to employ and as necessary dismiss staff of the beach management unit;
- (k) to maintain accounts and registers as specified in these regulations;
- to exchange information with other beach management units and other relevant agencies to promote the fair and transparent pricing of fish and fish products;
- to formulate funding proposals, make financial reports and present them to the assembly for approval;
- (n) to inspect and record visiting fishing vessels and give permission to land where appropriate;
- (o) to supervise the financial management of the beach management unit;

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- (p) to ensure that fishing boats within their areas of jurisdiction have certificates of seaworthiness and are equipped with life-saving equipment; and
- (q) to undertake such other tasks as may specified in these regulations or the by-laws.

25. Powers and duties of the chairperson

- (1) The chairperson of a beach management unit shall—
 - (a) chair the assembly and meetings of the executive committee;
 - (b) act as the official spokesperson of the beach management third parties;
 - (c) ensure timely submission of data, information and financial reports by the committee to the assembly and the Director;
 - (d) for purposes of implementing the Act and any regulations made there under have powers to arrest any person whom he has reason to believe his committed an offence;
 - seize any fish, fishing gear, vessel, or other items which be has reason to believe has been used in the commission of an offence, or in respect of which an offence has been committed;
 - (f) hand over to an authorized fisheries officer as soon as is reasonably practicable, any person arrested or item seized under the provisions in this regulation; and
 - (g) undertake such other tasks as may be specified in these regulations or the by-laws.
- (2) Without prejudice to any provision in these regulations the chairperson's powers shall be limited to his areas of jurisdiction as guided by the Director.

26. Duties of the secretary

The secretary of a beach management unit shall—

- convene meetings of the executive committee consultation with the chairperson;
- (b) act as the minute clerk of the assembly and at meetings of the executive committee;
- (c) maintain the correspondence of the beach management unit;
- (d) compile monthly, quarterly and annual performance reports for submission and presentation to the executive committee.
- maintain and update all records of the beach management unit members, equipment, statistics and other records;
- (f) collect and submit all data and information as may be required by the Director;
 and
- (g) undertake such other duties as may be assigned by the chairperson.

27. Duties of the treasurer

The beach management suit treasurer shall—

- (a) prepare and make payments authorized by the executive committee;
- (b) maintain the record of financial transactions conducted by the beach management unit;
- (c) receive cash and make deposits to the beach management unit's bank account;

- (d) keep records of assets and liabilities of the beach management unit;
- (e) prepare monthly, quarterly and annual financial reports;
- (f) submit and present financial reports to the executive committee and the assembly for scrutiny and approval; and
- (g) undertake any other duty as may be assigned by the chairperson.

PART V - BEACH MANAGEMENT UNIT FINANCES AND FINANCIAL MANAGEMENT

28. Beach management unit funding

A beach management unit may with the prior written approval of the Director, levy fees and charges against its members and other users of the beach in respect of services that it provides in connection with the operation and management of the beach and its participation in co-management activities pursuant to regulation 7.

- (2) Fees and charges of the type referred in subregulation (1) may include—
 - (a) membership fee payable by all members;
 - (b) an annual registration fee for fishing vessels;
 - (c) a joining fee for new members;
 - (d) landing fees payable by fishing vessels that land fish or fishery products at the fish landing station;
 - (e) charges for the use of facilities and services provided by the beach management unit;
 - a rental fee in respect of buildings and constructions located on the fish landing station; and
 - (g) a marketing fee payable by persons involved in the trading of fish.
- (3) Other sources of income of a beach management unit may include grants or donations from the Government, private persons, non-Governmental organisations or other donor bodies.

29. Management of beach management unit finances and assets

- (1) In connection with the management of its finances and assets, a beach management unit shall— $\,$
 - (a) open one or more bank accounts, the signatories to which shall be the chairperson and the treasurer and such other persons as may be so designated in writing from time to time by the executive committee;
 - (b) establish a reserve fund to cover the costs of unforeseen events; and
 - (c) under the guidance of the Director, establish an appropriate financial management system to support its financial operations.
 - (2) A beach management unit shall maintain the following books and records—
 - a register of members, which should be reviewed, and, as necessary, updated every three months that should contain the name, address and membership category of each member;
 - (b) a register of vessels sad gear owned by members of the beach management sail members;
 - (c) a record of duet, feet and charges owed and paid;
 - (d) a record containing the minutes of the assembly;
 - (e) a record containing the minutes of the meetings of the executive committee;

- (f) a record of transactions and contracts;
- (g) an inventory of assets owned or used by the beach management unit; and
- (h) financial accounts in accordance with regulation 30.

30. Financial Accounts

- (1) A beach management unit shall maintain full accounts of receipts and expenditures and shall prepare an annual balance sheet and income and expenditure statement in a format specified by the Director.
- (2) The assembly on the proposal of the executive committee shall adopt the annual balance sheet and income and expenditure statement annually.
- (3) The executive committee of each beach management unit shall within 120 days of the end of its financial year file an annual return with the Director, in the specified format, together with a copy of its annual balance sheet and income and expenditure statement together with the stipulated filing fee.

PART VI – ESTABLISHMENT REGISTRATION, SUPPORT AND SUPERVISION, AND DISSOLUTION OF BEACH MANAGEMENT UNITS

31. Procedure for Establishment and gazettement of a Beach management unit

- (1) A group of persons intending to be registered and qualify as a beach management unit shall submit an application for the establishment of a beach management unit to the Director in FORM FD/A5 as set in the First Schedule to these regulations and provided, amongst other category of members, it is signed by at least 30 boat owners.
- (2) Following the survey and delineation of the beach pursuant to regulation 5(2) of these regulations, the authorised fisheries officer shall cause to be placed in prominent places on and around the beach notices calling upon potential members of the beach management unit to register their interest in becoming members within a period of 30 days.
- (3) Following the expiry of that 30-day period the authorised fisheries officer shall cause to be displayed at the beach a list of persons who consider themselves potential members and shall invite comments on the list.
- (4) Based on the comments received the authorised fisheries officer shall finalise the list of potential members.
- (5) The authorised fisheries officer shall call a meeting of the potential members from all proposed membership category to elect between five to ten interim representatives.
- (6) The authorised fisheries officer shall work with the interim representatives to determine and draft the by-laws of the beach management unit.
- (7) Following the preparation of an agreed draft of the by-laws, the authorised fisheries officer shall cause a meeting to be held at which the potential members of the proposed beach management unit shall discuss and approve the draft by-laws.
- (8) Following the conclusion of the meeting, the Authorised fisheries officer shall forthwith submit the following documents to the Director—
 - (a) the minutes of the potential members' meeting;
 - (b) the approved draft by-laws;
 - (c) an application for establishment of Beach Management Unit in FORM FDIAS as set out in the First Schedule to these regulations.

- (9) The Director shall assess the documents submitted to him under paragraph (8) and may—
 - approve the application if he is satisfied that the application and supporting documents are in order;
 - (b) return the application and supporting documents to the Authorised fisheries officer with his reasons in writing, if he is not satisfied.
- (10) Any party aggrieved by a decision of the Director pursuant to paragraph (9) may appeal to the Minister in accordance with the provisions of regulation 34 of the Fisheries (General) Regulations.
- (11) On granting approval loan application the Director shall by notice in the Kenya *Gazette* establish the beach management unit and issue a certificate of registration (FORM FD/CR3) as set out in the Second Schedule to these regulations.

32. Registration

- (1) The Director shall establish and maintain a register of beach management units which shall Contain the following details of each beach management unit—
 - (a) the name;
 - (b) the principal office;
 - (c) the number of members;
 - (d) the names, addresses and telephone numbers (if any) of the chairperson and the members of the executive committee; and
 - the date of filing of the most recent annual return, together with a copy of that return.
- (2) The Register of beach management units shall be open to public examination during normal office hours.

33. Support and supervision of beach management units

- (1) The Director shall be responsible for supporting the establishment and operation of beach management units and for supervising their technical, legal and financial performance.
 - (2) An authorized fisheries officer shall in respect of a beach management unit—
 - (a) act as the presiding officer in its elections;
 - (b) routinely attend the meetings of the executive committee;
 - (c) facililate the provision of technical and other assistance;
 - (d) provide general guidance and support; and
 - (e) undertake such other tasks as are specified in these regulations.
- (3) An authorized fisheries officer may cause the annual accounts of a beach management unit to be subject to an annual audit by such suitably qualified and responsible person as he may with the approval of the Director appoint.
- (4) An authorized fisheries officer may routinely request from a beach management unit
 - (a) copies of the accounts together with copies of books and records required to be maintained in accordance with these Regulations;
 - (b) information concerning the discharge by them of their tasks;
 - (c) information and documentation concerning the implementation of comanagement plans; and

- (d) such other information as he may reasonably require to be able to satisfy himself and that the beach management unit is functioning lawfully.
- (5) An authorized fisheries officer may make enquiries into the conduct of the affairs of a beach management unit during the course of which he may inspect its books and records and interview its members—
 - (a) on the credible evidence of three or more members of that beach management unit who allege misconduct; or
 - (b) if, having reviewed a copy of the annual return and accounts of that beach management unit, there is in the opinion of the Director, *prima fade* evidence of financial malpractice or other irregularities.
- (6) If, following the conduct of an audit or such farther enquiries an authorised fisheries officer finds *prima fade* evidence of financial malpractice, misconduct or that the beach management unit has not been operating in accordance with the provisions of these regulations he may require the executive committee to convene the assembly where he may present his findings to the members of the beach management unit.
- (7) If the executive committee fails to convene the assembly within 30 days, the authorised fisheries officer may suspend its committee and call such a meeting himself and shall forthwith notify the Director of the suspension.
- (8) If the executive committee is suspended or removed in accordance with the foregoing paragraph, the authorised fisheries officer may appoint a temporary manager to run the beach management unit until fresh elections are held.
- (9) A member of the executive committee who is aggrieved by a decision of an authorised fisheries officer to remove the executive committee may within fourteen days appeal in writing to the Director, whose decision shall be final
- (10) If the Director approves the decision of the authorised fisheries officer, he shall call for fresh elections to replace the committee or committee member(s) so removed within ninety days of the Director's decision.

34. Dissolution of beach management units

- (1) The Minister may by notice published in the Kenya *Gazette* dissolve a beach management unit on one or more of the following grounds—
 - (a) the tasks of the beach management unit no longer exist;
 - (b) the beach management unit is not able to practically fulfil its tasks;
 - (c) the beach management unit is insolvent;
 - (d) the members of the beach management unit have repeatedly engaged in criminal activity; or
 - (e) the continued existence of the beach management unit is no longer required for any other reason.
- (2) Following the publication of a decision to dissolve a beach management unit the Minister shall appoint a liquidator to wind up its affairs.

PART VII - GENERAL PROVISIONS

35. Obstruction

No person shall—

 (a) wilfully obstruct an officer of a beach management unit from carrying out official duties within his area of jurisdiction and in accordance with the provisions of these regulations; or

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refuse or fail to answer any questions or furnish any information or produce (b) any document relevant to the provisions of these regulations when requested to do so by any member of the executive committee or an authorized fisheries officer.

36. Malicious damage to beach management unit documents

No person shall falsify or unlawfully alter, destroy, erase or obliterate any declaration, certificate, identification label or any other document made or issued under these regulations.

37. Penalty

Any person who contravenes the provisions of these regulations shall be guilty of an offence and liable to a fine not exceeding one hundred thousand shillings or imprisonment for a term not exceeding two years or both.

FIRST SCHEDULE THE FISHERIES ACT

[Cap. 378.]

THE FISHERIES (BEACH MANAGEMENT UNIT) REGULATIONS

Form FD/A5	(r. 31(1))
APPLICATION FOR T	IE REGISTRATION OF BEACH MANAGEMENT UNIT

PARTI

- Beach Management Unit and hereby attach the by-laws for the proposed Beach 4 Management
- 2. List of applicants (at least 30 of the applicants must be boat owners).

	Name of Applicant	ID Number	Membership Category	Address and Residence	Signature
1.					
2.					
3.					
4.					
5.					
6.					2
7.		8			
8.					
9.					

3.	Mailing address of the proposed Beach Management Unit
	The Article Business of Anni

^{4 (}a) Other than fisheries and beach management activities, is the organization going to be involved in other activities? Yes/No.

FIRST SCHEDULE , FORM DF/A5—continued

	(b) If the answer to (a) above	is yes, please list the activities:	
5.	Does the applying organization If the answer is Yes please s	own any movable or immovable	and insert details of certificates of
Ma	me or description of the asset	Official ownership Number	Custodian
Iva	me or description of the asset	Onicial ownership Number	Custodian
			,
6.	information and particulars sup	plied by us herein are true, acc scovery of any false information	aragraph 2 above, declare that the urate and correct in every respect, on provided by us will render this
	Signature of Representative		Date
	Name and Address of the Repo	resentative	
7.	This is to certify that the above	named persons are known to n	ne and are residents of
		Location) and the ir I hereby witness their declaration	formation given by them is true to n;
	Property of the second of the		
		50	(Month) (Year)
8.	This is to certify that I have		am satisfied/not satisfied with this
	Signature of Authorised fisheric	es officer	
	Name of the Officer		
	Official Stamp		
	Date	ZYMERO EZOLOGRANI EZONOLE IZEZINENI E	
		PART II	
		OFFICIAL USE ONLY	
			Beach
	nagement Unit and I am satisfic prove the application.	ed/not satisfied with this applica	ation and therefore approve/do not
Sig	nature	Date	

5555			

SECOND SCHEDULE FISHERIES ACT

[Cap. 378.]

FISHERIES (BEACH MANAGEMENT UNIT) REGULATIONS, 2007

Fo	rm F	D/CR3 (r. 31(11))
(CER	TIFICATE OF REGISTRATION FOR THE BEACH MANAGEMENT UNIT (BMU)
1	(a)	Name of the Beach Management Unit
	11.5	Names(s) of landing site(s) covered the BMU
	(c)	Postal Address of the BMU
2.	Phy	sical Location of the offices of Beach Management Unit:
	Dis	trict Division/Town
	Loc	ation
	Thi	s is to certify that
	ma	a beach management unit under the provisions of these regulations and for the purpose of nagement and development of fishery resources within its area(s) of jurisdiction in ordance with the provisions of these regulations and contingent to the conditions specified eunder:

	AND DESCRIPTION OF THE PARTY OF	
	Dat	le of Registration:
	Sig	nature
	Nar	me
	Offi	icial Stamp
		Director of Fisheries
		THIRD SCHEDULE
		THE FISHERIES ACT
		[Cap. 378.]
		FISHERIES (BEACH MANAGEMENT UNIT) REGULATIONS, 2007
0	rm F	D/NF/1 (r. 15(1)(g))
		NOMINATION FOR ELECTIONS FORM
		e undersigned, being registered members, nominate the under mentioned person as a ate for the position of
		78

THIRD SCHEDULE—continued

Candidates Name	ID/ No.	Place of Residence	Occupation	Membership Number	Membership Category	Age	Sex	Marital Status	Signature

We, the undersigned, being registered members, support the foregoing nomination.

	Name	BMU/Registration No.	Membership Category	Licence No.	Sign
1					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

Comments of the Presiding officer
Name of Presiding officer
Signature

FOURTH SCHEDULE FISHERIES ACT [Cap 378.]

FISHERIES (BEACH MANAGEMENT UNIT) REGULATIONS, 2007

Form FD/ER 1	(r. 15(5))
BMU EXECUTIVE COMMITTEE ELECTION RETURNS FORM	

To: The Director of Fisheries (USE OF CAPITAL LETTERS) Name of Beach Management Unit Postal address of the BMU Name of Water body District Division Location Village Name of Main Landing site Name of subsidiary landing sites (for each landing site provide name and its village in brackets) Date of BMU Executive Committee Election Total No. of fishing vessels (includes main & subsidiary landing sites) Total No. of engines Total No. of BMU members Total No. of fish processors Total No. of "Other"

Name (CAPITALS)	Sex (M/F)	Official position	Category (boat owner, crew, fish trader, others)	ID Number	Signature
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
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[Issue 1]

FOURTH SCHEDULE, FORM DF/ER1—continued

This is to certify that the election for the Executive	committee of Beach
Management Unit has been conducted in accord the results are as indicated above.	ance with the provisions of these regulations and
Name of Presiding Officer	
Signature	Date
For official use only (Director of Fisheries or jurisdiction over the BMU)	Authorised fisheries officer with Administrative
(Approved/Not approved)	Date
Name	Signature
Stamp	
Ş a	

Annex FR2

Lamu County Fisheries Development Act (Act No. 3 of 2015)

SPECIAL ISSUE

Lamu County Gazette Supplement No. 10 (Acts. No. 3)





LAMU COUNTY GAZETTE SUPPLEMENT

ACTS, 2015

NAIROBI, 25th June 2015

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THE LAMU COUNTY FISHERIES DEVELOPMENT ACT, 2015

No. 3, 2015

AN ACT of the County Assembly of Lamu to make provisions for the establishment of the Lamu County Fisheries Development Agency, and the provision for the Revolving Fund to enhance access to loans, fishing fleet and fisheries inputs, by the fishermen, fish traders, fish farmers and other persons involved in the fisheries business within the County; to promote avenues for wealth creation through creation of employment and enhance the County's economic development and for connected purposes.

ENACTED by the County Assembly of Lamu, as follows-

PART I—PRELIMINARY

Short title.

1. This Act may be cited as the Lamu County Fisheries Development Act, 2015.

Interpretation.

- 2. In this Act, unless the context otherwise requires—
- "Agency" means the County Fisheries Development Agency established under section 3 of this Act;

"Beach Management Unit" means a co-management structure by the fishing community with the County, NGOs and private sector at the fish landing site under this Act;

"Board" means the Board of Fisheries Development Agency under this Act;

"County" means the Lamu County Government;

"County Executive Committee Member" means the County Executive Committee Member for the time being responsible for Fisheries under this Act.

"Fishing Fleet" means an industrial fishing vessel with all its accessories as provided under this Act;

"Fisheries Inputs" means fishing gears, equipments, outboard engines, liners, fish feeds, fingerlings and other inputs that would promote fisheries development under this Act;

"Officer Administering the Fund" means the Chief Officer in charge of Fisheries;

"Revolving Fund" means a Fund established under this Act.

PART II — THE LAMU COUNTY FISHERIES DEVELOPMENT AGENCY

Establishment of the Lamu County Fisheries Development Agency.

- **3.** (1) There is established an Agency to be known as the Lamu County Fisheries Development Agency.
- (2) The Agency shall be a body corporate with perpetual succession and a common seal and shall, in its corporate name, be capable of—
 - (a) suing and being sued;
 - (b) taking, purchasing or otherwise acquiring, holding, charging or disposing of movable and immovable property;
 - (c) borrowing money or making investment; and
 - (d) doing or performing all other acts or things for the proper performance of its functions under this Act which may lawfully be done or performed by a body corporate.

Functions of the Agency.

- 4. The Agency shall be responsible for-
 - (a) advising the County Government of Lamu on policy matters related to the fisheries development;
 - (b) management of the Fisheries Revolving Fund on behalf of the County Government of Lamu;
 - (c) advising fishing communities on how to maximise the economic returns from fishing activity:
 - (d) promote value addition activities; and
 - (e) promote development of new fishery products.
 - (f) link fishers with local, regional and international markets.

5. The management of the Agency shall be vested in the Board

Management of the Lamu County Fisheries Development Agency.

Membership of the Board.

- 6. The Board shall consist of
 - (a) a chairperson appointed by the Governor and approved by County Executive Committee Member for the time being responsible for fisheries or his representative as the Chairperson;
 - (b) the County Chief officer in charge of fisheries as the Secretary to the board;

- (c) the County Director of Fisheries shall oversee the dayto-day operations of the Board;
- (d) chairperson of the Beach Management Units network for Lamu County appointed by County Executive Committee Member of the time being;
- (e) chairperson of the Fisher Co-operative networks of Lamu East and Lamu West sub-counties;
- (f) two women one from Lamu East and Lamu West.

Functions of the Board.

- 7. Other than the functions provided under Section 4 (a), (b), (c), (d), (e) and (f) of this Act, the Board shall also carry out the following functions
 - (a) to ensure timely and efficient disbursement of funds to the beneficiaries;
 - (b) to receive and discuss annual reports and returns from the Beach Management Units;
 - (c) to ensure the compilation of proper records, returns and reports from the Beach Management Units;
 - (d) receive and address complaints and disputes and take any appropriate action; and
 - (e) perform such other duties as the Board may deem necessary from time to time for proper execution of its functions.

Conduct of Business and Affairs of the Board.

- **8.** (1) The conduct and regulation of the business and affairs of the Board shall be as provided in the First Schedule.
- (2) Except as provided in the First Schedule, the Board may regulate its own procedure.

Other Staff.

9. The Board may employ such number of staff as shall be necessary to effectively enhance the operation of the Agency.

PART III—ISSUANCE OF THE FISHING FLEET AND FISHERIES INPUTS

Acquisition and requisitions of the fishing fleet and fisheries inputs.

10. (1) In the acquisition and requisition of the fishing fleet and fisheries inputs, the procuring entity shall strictly adhere to the provisions of the Public Procurement and Disposal Act.

Issuance of Fishing Fleet and Fisheries Inputs.

- 11. (1) Issuance of fishing fleet and fisheries inputs shall be through the Beach Management Unit and the Fisher Co-operative networks within the County.
- (2) In the issuance of the fishing fleet and fishing inputs, the principles of equity and gender balance shall be considered.
- (3) Youth, women and people with disability shall be given due consideration in the issuance of the fishing fleet and the fishing inputs.
- (4) The fishing fleet and fisheries inputs are provided under the Second Schedule.

Mode of issuance of the fishing fleet and fisheries Inputs.

- 12. (1) The fishing fleet and fisheries inputs shall be provided on the following terms and conditions—
 - (a) issued on loan basis;
 - (b) a down payment of 5 per cent of the total sum of value shall be paid and receipted in advance;
 - (c) the subsequent instalments shall be paid and receipted at a rate of 1.5 per cent monthly until the total sum is cleared;
 - (d) all assets loaned out shall be subsidised at a rate of 20 per cent of the total cost;
 - (e) there shall be a grace period of three months prior to the onset of monthly instalment repayment;
 - (f) the percentage referred to under paragraph (b) and (c) shall be applicable only to fisheries inputs not exceeding Ksh.1(one) million;
 - (g) those fisheries inputs exceeding the limit in paragraph
 (8) shall be on terms to be determined by the Board appropriately;
 - (h) assets of a similar value to the inputs loaned shall act as collateral.
- (2) Without prejudice to the provision of subsection (1) above the board may provide to any fisher folk assistance in the form of equipment or other implements at no cost to the fisher folk.

Eligible beneficiaries.

1

- 13. The eligible beneficiaries shall be fisher folk and fish farmers who must meet the following terms—
 - (a) registered through their respective Beach Management Unit or be a member of a self-help group;
 - (b) belong to a registered fish farmer cluster;

- (c) be a honest member of the Beach Management Unit and fish farmer cluster;
- (d) belong to Beach Management Unit through co-operatives;
- (e) belong to Beach Management Unit through other social development groups; and
- belong to a registered fisher co-operative society within the County.

Loan and fisheries inputs repayment.

- 14. (1) Loan and fisheries inputs repayment shall be done through the Beach Management Units.
- (2) Defaulters shall have their collaterals auctioned for recovery of the money after six months.
- (3) The inputs shall be taken away from the defaulters, re-valued and issued to other beneficiaries.

Maintenance and Service of Fishing Fleet and Fisheries Inputs.

15. The maintenance of the issued fishing fleet and fisheries inputs shall be the sole responsibility of the beneficiary.

PART IV — FINANCIAL PROVISIONS

Establishment of the Lamu County Fund.

- 16. (1) There is established a Fund to be known as the Lamu Fisheries Revolving County Fisheries Revolving Fund.
 - (2) The Fund shall consist of—
 - (a) monies appropriated by the County Assembly;
 - (b) monies ploughed back from the loaned assets;
 - (c) monies from private sector as loans, grants or donation;
 - (d) monies from investors as loans, grants or donation;
 - (e) monies from donors;
 - (f) any other loans and grants given to the Agency.

Administration of the Fund.

- 17. (1) The Fund shall be administered and operated by the officer administering the Fund.
 - (2) The officer administering the Fund shall —
 - (i) supervise and control the administration of the Fund;
 - (ii) utilise the interest accruing thereto to defray operating expenses; and may impose any reasonable restriction or other requirements concerning such use;

- (iii) cause to be kept books of accounts and other books and records in relation to the Fund and for all loans financed from the Fund;
- (iv) prepare, sign and transmit to the Auditor-General in respect of each financial year and within three (3) months after the end thereof, a statement of accounts relating to the Fund, prepared and signed by him specifying the income of the Fund and showing the expenditure incurred from the Fund, in such details as the Board may from time to time direct in accordance with the Public Finance Management Act;
- (v) furnish such additional information as may be re-quired for the purpose of examination and audit by the Auditor-General; and
- (vi) designate and appoint such staff as may be necessary to assist him in the administration of the Fund and may require such staff to carry out such inspections as may be necessary to verify any information submitted under
- (3) Every statement of account prepared under this Act shall include details of the balances between the assets and liabilities of the Fund and shall indicate the financial status of the Fund as at the end of the financial year concerned.

Fees for Registration, Licence, Permits

18. There shall be charged fees in accordance with the provisions of this Act as provided under the Third Schedule. Changes in this and other Charges, provision will be done by the Finance Executive Member every financial year when deemed necessary.

Bank Account

19. The Agency shall open and maintain such bank accounts as are necessary for the exercise of its functions.

Estimates and expenditure.

- 20. (1) At least three months before the commencement of each financial year, the Secretary of the Board shall cause to be prepared, estimates of all the expenditure required for the purposes of this Act for that year and shall present such estimates to the Board for review.
- (2) The Board shall review the estimates forwarded under subsection (1) and may make such alterations thereto as it may deem appropriate and shall thereafter agree upon those estimates.

- (3) The Secretary of the Board shall dispatch a copy of the estimates agreed upon by the Board under subsection (2) to the County Executive Committee Member responsible for matters relating to finance.
- (4) The Chairperson of the Board or some other member thereof authorised by the Board in that behalf shall present the estimates agreed by the Board for consideration and approval by the County Assembly.
- (5) Upon the approval of the estimates presented to the County Assembly under subsection (4), all monies from time to time required for the purposes of this Act shall be paid from the County Reserve Fund.

Accounts Audit.

10

- 21. (1) The Secretary of the Board shall ensure that proper books and records of accounts of the Board are kept and maintained.
- (2) Within three months after the end of each financial year, the Secretary of the Board shall submit to the Controller of Budget and Auditor-General, the accounts of the Board for the year.
- (3) Notwithstanding the provisions of any other written law, the accounts of the Board shall be audited and reported upon by the Controller of Budget and Auditor-General.

Remuneration of memberes of the Board

22. Members of the Board shall receive such allowances as may be determined by the County Executive Committee Member in consultation and approval by the County Assembly.

PART V— MISCELLANEOUS PROVISIONS

Annual report of Agency.

23. Within three months after the end of each calendar year, the operations of the Board shall prepare and lay before the County Assembly, a report of its operations during that year.

Offences and penalties.

- 24. (1) Any person who destroys or misuses the fisheries equipment issued to him commits an offence.
- (2) Any person who obtains the fisheries equipment without following the procedures laid down under this Act commits an offence.
- (3) Any person who contravenes the provisions of this Act shall be guilty of an offence and liable to a fine not exceeding Kenya shillings Two Hundred Thousand or imprisonment of a term not exceeding two years or both.

11

Regulations.

25. The Board may make regulations prescribing anything required by this Act and generally for the better carrying out of the purposes of this Act.

FIRST SCHEDULE (Section 8)

CONDUCT OF BUSINESS AND AFFAIRS OF THE BOARD

- 1. A member of the Board shall, subject to the provisions of this Schedule, hold office for a period of 3 years on such terms and conditions as may be specified in the instrument of appointment, but shall be eligible for appointment for not more than two terms.
 - 2. (1) A member of the Board may
 - (a) at any time resign from office by notice in writing to the County Executive Committee Member;
 - (b) be removed from office by the County Executive Committee Member on recommendation of the Board if the member—
 - is absent from three consecutive meetings of the Board without its permission;
 - (ii) is convicted for a criminal offence that amounts to a felony under the laws of Kenya;
 - (iii) is incapacitated by prolonged physical or mental illness for a period exceeding three months; or
 - (iv) is otherwise found unable or unfit to discharge his functions.
- (2) The chairperson shall, on recommendation of the Board, be removed from office by the Governor.

Committees of the Board.

- 3. (1) The Board shall meet not less than five times and not more than ten times in every financial year and not more than two months shall clapse between the date of one meeting and the date of the next meeting.
- (2) Notwithstanding subparagraph (1), the Chairperson may, and shall upon requisition in writing by at least three members convene a special meeting of the Board at any time for the transaction of the business of the Board.
- (3) Unless three quarters of the total members of the Board otherwise agree, at least seven days written notice of every meeting of the Board shall be given to every member of the Board.

- (4) The quorum for the conduct of business of the Board shall be six members.
- (5) The Chairperson shall, when present, preside at every meeting of the Board but the members present shall elect one member to preside whenever the Chairperson is absent, and the person so elected shall have all the powers of the Chairperson with respect to that meeting and the business transacted thereat.
- (6) Unless a unanimous decision is reached, a decision on any matter before the Board shall be by a majority of the votes of the members present and voting, and in case of an equality of votes, the Chairperson or the person presiding shall have a casting vote.
- (7) Subject to subparagraph (4), no proceedings of the Board shall be invalid by reason only of a vacancy or absenteeism of members thereof.
- (8) Subject to the provisions of this Schedule, the Board may determine its own procedure and the procedure for any committee of the Board and for the attendance of other persons at its meetings and may make standing orders in respect thereof.
- **4.** (1) The Board may establish such committees as it may deem appropriate to perform such functions and responsibilities as it may determine.
- (2) The Board shall appoint the Chairperson of a committee established under subparagraph (1) from amongst its members.
- (3) The Board may, where it deems appropriate, invite any person to attend the deliberations of any of its committees.
- (4) All decisions by the committees appointed under subsection (1) shall be ratified by the Board.

Disclosure of Interest.

- 5. (1) A member who has an interest in any contract, or other matter present at a meeting, shall at the meeting and as soon as reasonably practicable after the commencement, disclose the fact thereof and shall not take part in the consideration or discussion of, or vote on, any questions with respect to the contract or other matter, or be counted in the quorum of the meeting during consideration of the matter.
- (2) A disclosure of interest made under subparagraph (1) shall be recorded in the minutes of the meeting at which it is made.

(3) A member of the Board who contravenes subparagraph (1) shall cease to be a member of the Board upon direction of the County Executive Committee Member.

Common Seal.

14

- **6.** (1) The Common Seal of the Agency shall be kept in such custody as the Board may direct and shall not be used except on the order of the Board.
- (2) The affixing of the Common Seal of the Agency shall be authenticated by the signature of the Chairperson, the Chief Officer for Fisheries and one member nominated by the Board.
- (3) Any document not required by law to be made under seal and all decisions of the Board may be authenticated by the signatures of the Chairperson, the Chief Officer for Fisheries and that member nominated by the Board under Section 7(2) above.
- (4) The Common Seal of the Board when affixed to a document and duly authenticated shall be judicially and officially noticed and unless and until the contrary is proved, any necessary order or authorisation by the Board under this section shall be presumed to have been duly given.

SECOND SCHEDULE

(Section 11(4))

FISHING FLEET AND FISHERIES INPUTS

- 1. Fishing vessels
- 2. Outboard engines and inboard engines
- 3. Hooks and lines
- 4. Fishing nets for marine and fresh water lakes
- 5. Fish finders
- 6. Oars
- 7. GPS
- 8. Anchors
- 9. Buoys
- 10. Sinkers
- 11. Baits and lures
- 12. First Aid Kits
- 13. Ropes
- 14. Rods
- 15. Reels
- 16. Bobbers (floaters)
- 17. Echo sounders
- 18. Generators
- 19. Fish feeds pelletiser machines
- 20. Pond liners
- 21. Fish cooler boxes
- 22. Long liners
- 23. Hatchery Equipment's and
- 24. Other related fisheries inputs procured in accordance to the interpretation of this Act.
- 25. Life jackets
- 26. Snorkel
- 27. Fisheries flag for divers

16

THIRD SCHEDULE

(Section 18)

FEES FOR REGISTRATION, LICENCE, PERMITS AND OTHER CHARGES

1. REGISTRATION OF LOCAL FISHING VESSELS

KSh.				
A-Non-mechanised fishing vessels				
(i) Vessel not exceeding 5 (five) metres length and 1— (One and half) metres beam				
(ii) Vessel of more than 5 (five) metres but not exceeding				
10 (ten) metres length500				
(iii) Vessel of more than 10 (ten) metres but not exceeding				
15 (fifteen) metres length				
(vi) Vessels of more than 15 (fifteen) metres length				
FISH INSPECTION FEE				
2. FISHERMEN, SPORTFISHERMEN LICENCES				
2.1 Fisherman's Licence (National Government)				
CLASS A				
Fisherman not using any craft50				

No. 3, 2015		The Lamu County Fisheries Development Act,	2015	17	
CL	ASS B				
Fisherman using non-mechanised vessel:					
(i) (ii)		eding 5 (five) metres lengthg 5 (five) metres length			
CLA	ASS C				
Fish	erman using me	chanised vessel:			
(i)	Vessel of more beam	than 5 (five) metres length and $1\frac{1}{2}$ (one and hal			
(ii)	Vessel of more beam	than 5 (five) metres length and $2\frac{1}{2}$ (two and hal	lf) metre 30	es 0	
(iii)		han 10 (ten) metres length and but not exceeding 1			
(iv)	Vessel of more th	han 15 (fifteen) metres length	500	0	
2.2.	Sport Fishing Li	cence per head			
(i) (ii)		e			

Annex FR₃

Lamu County, Lamu County Integrated Development Plan (2018-2022), 2018 (Extracts)





LAMU COUNTY INTEGRATED DEVELOPMENT PLAN 2018 - 2022

September 2018

County Integrated Development Plan, 2018 - 2022

Prepared by:

The Department of Finance, Strategy & Economic Planning

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The County Government of Lamu

Vision Statement

A nationally competitive county offering good quality life for all its citizens through prudent use of resources, equitable provision of services and implementation of sustainable development.

Mission Statement

To provide services and ensure socio –economic development of the people of Lamu County through prudent utilization of resources and implementation of projects and programmees.

Core Values

Public Participation The county will be encourage and enhance public

participation especially during preparation of medium and long term county development plans, annual budget and during review of project performance. Community decisions will be critical in shaping tehe county's development agenda.

Social Inclusion The county will encourage inclusion of all members of the

community including: the poor, men, women, physically

challenged, youth, vulnerable and marginalized groups.

Equity All community members including the most vulnerable, the

poor, the women, People with Disability and youth will be

enjoy equal opportunities and rights.

Integrity, Accountability

and Transparency

The county will uphold the virtues of integrity, accountability, transparency and honesty in all county development activities to promote trust, understanding and

harmony.

Prudence All county resources will be used efficiently, wisely and

carefully to minimize loss and wastage. The county will strive to ensure that projects are nvironmentally sustainable, friendly and beneficial to both present and future generations.

Sustainability The county will support projects with potential for long term

continuation and of benefits to communities.

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Abbreviations and Acronyms

ADP Annual Development Plan

AGPO Access to Government Procurement Opportunities

AI Artificial Insemination

AMS Agricultural Mechanization Services

APDK Association for the Physically Disabled of Kenya

ATC Agricultural Training Centre
BPO Business Process Outsourcing
CBS County Bureau of Statistics

CDLD County Director of Livestock Development

CECM County Executive Committee Member

CoG Council of Governors

CGL County Government of Lamu

CIDP County Integrated Development Plan
CRA Commission on Revenue Allocation

DMS Debt Management Strategies
ECDE Early Childhood Education
EMU Efficiency Monitoring Unit
FKF Football Kenya Federation

FY Financial Year

GDP Gross Domestic Product

GIS Geographical Information System

HRH Human Resource for Health

ICT Information and Communication Technology

ICTA Information and Communication Technology Authority

IFMIS Integrated Financial Management System

KICOSCA Kenya Inter-Counties Sports and Culture Association

KLRC Kinoru livestock resource centre

KRB Kenya Roads Board

KERRA Kenya Rural Roads Authority

KENHA Kenya National Highway Authority

KURA Kenya Urban Roads Authority

LAPSSET Lamu Port Southern Sudan Ethiopia Transport

LCADCB LAMU County Alcoholic Drinks Control Board

MDGs Millennium Development Goals

LAWASSO LAMU Water and Sewerage Services

LIDC LAMU Investment and Development Corporation

MTDMS Medim Term Debt Management Strategy
MTEF Medium Term Expenditure Framework

MTP Medium Term Plan

LTRH LAMU Teaching & Referral Hospital

LYB Lamu Youth Brigade

NACADA National Authority for the Campaign against Alcohol & Drug Abuse

NDMA National Disaster Management Authority

NCPB National Cereals and Produce Board

NCPD National Council for Population & Development

OVCs Orphans and Vulnerable Children

PESTEL Political, Economic, Social, Technological, Environmental & Legal

PFMA Public Finance Management Act

PSA&L Public, Service and Administration& Legal Affairs

PPP Public Private Partnership
PWDs Persons with Disabilities

SAGAs Semi Autonomous Government Agencies

SDGs Sustainable Development Goals

SWG Sector Working Group

SWOT Strengths, Weaknesses, Opportunities & Threats

UNESCO United Nations Education, Scientific and Cultural Organization

WENR Water, Environment and Natural resources
WRMA Water Resource Management Authority

WRUA Water Resource Users Association

Glossary of Commonly Used Terms

Term	Meaning
Baseline:	It is an analysis describing the initial state of an indicator before the start of a project/programme, against which progress can be assessed or comparisons made.
County Assembly Public Service Board	It is a body charged with the responsibility of developing and implementing human resource policies and framework for the County Government in line with the relevant laws. The CPSB handles all human resource issues in the County.
County Assembly	It is the legislative arm of the County Government which makes laws to govern certain operations. The assembly also has oversight responsibilities on the county's operational activities. The County Assembly consists of Members of County Assembly (MCAs), Clerk and the Speaker elected by the Members of the County Assembly
County Budget and Economic Forum County Executive	Comprises the Governor, CEC members, a number of representatives, not being county public officers, equal to the number of executive committee members appointed by the Governor from persons nominated by organizations representing professionals, business, labour issues, women, persons with disabilities, the elderly and faith based groups at the county level. They are a means for consultation by the county government on preparation of county plans, the County Fiscal Strategy Paper and the Budget Review and Outlook Paper for the county and matters relating to budgeting, the economy and financial management at the county level Consists of the county governor and the deputy county governor; and members appointed by the county governor, with the approval of the assembly, from among persons who are not members of the assembly.
County Government	The unit of devolved government
Demographic Dividend	the demographic dividend is the accelerated economic growth that may result from a decline in a country's mortality and fertility and the subsequent change in the age structure of the population. It is evident in Kenya that demographic transition is taking place at both national and county level creating a demographic window of opportunity to harness the demographic dividend.

Term	Meaning
Development Committee	An independent focus group centered on development and discussion of policies, guidelines, and processes by providing valuable input for development and planning.
Development	The process of economic and social transformation that is based on complex cultural and environmental factors and their interactions.
Devolution	The statutory delegation of powers from the central government of a sovereign state to governat a subnational level, such a regional or local level. Devolution in Kenya is the pillar of the Constitution and seeks to bring government closer to the people, with county governments at the centre of dispersing political power and economic resources to Kenyans at the grassroots.
Flagship/Transformative Projects Government	These are projects with high impact in terms of employment creation, increasing county competitiveness, revenue generation etc. They may be derived from the Kenya Vision 2030 and its MTPs or the County Transformative Agenda. Is a means by which state policies are enforced, as well as
Government	a mechanism for determining the policy.
Green Economy	Is defined as an economy that aims at reducing environmental risks and ecological scarcities, and that aims for sustainable development without degrading the environment. Green economy considerations are envisaged by mainstreaming cross-cutting issues such as climate change; Environmental degradation; HIV/AIDs; Gender, Youth and Persons with Disability (PWD); Disaster Risk Management (DRM), Ending Drought Emergencies (EDE) among others.
Human Development Index	It is a composite measure that incorporates mostly
(HDI):	indicators derived from social sectors like life expectancy, years of schooling, and the general standard of living in the region or country.
Indicator	An indicator is a sign of progress /change that result from your project. It measures a change in a situation or condition and confirms progress towards achievement of a specific result. It is used to measure a project impact, outcomes, outputs and inputs that are monitored during project implementation to assess progress
Integration	Combining or coordinating separate county programmes and projects to provide a harmonious, interrelated plan in an organized or structured manner to form a constituent unit that function cooperatively

Term	Meaning
	0
Outcome Indicator Outcome	This is a specific, observable, and measurable characteristic or change that will represent achievement of the outcome. Outcome indicators include quantitative and qualitative measures. Examples: enrolment rates, transition rates, mortality rates etc. Measures the intermediate results generated relative to the objective of the intervention. It describes the actual change in conditions/situation as a result of an intervention output(s) such as changed practices as a result of a programme or project.
Output	Immediate result from conducting an activity i.e. goods and services produced.
Performance indicator	A measurement that evaluates the success of an organization or of a particular activity (such as projects, programs, products and other initiatives) in which it engages.
Programme	A grouping of similar projects and/or services performed by a Ministry or Department to achieve a specific objective; The Programmes must be mapped to strategic objectives.
Project	A project is a set of coordinated activities implemented to meet specific objectives within defined time, cost and performance parameters. Projects aimed at achieving a common goal form a programme.
Public Participation	An action or a series of actions a person takes to involve themselves in affairs of government or community that directly engages the public in decision-making and gives full consideration to public input in making that decision. These activities include voting, attending meetings, participating in public or private political discussion or debate on issues, signing a petition on a desired government action or policy, volunteering in community activities and contributing money to a political party or candidate of one's choice among other similar activities.
Spatial Development	These are techniques used by planners and other actors of decision making to facilitate integrated balanced development.
Target	It is a planned level of an indicator achievement

Executive Summary

County Government Act, 2012, Section 104, obligated counties to develop County Integrated Development Plans (CIDPs) and setting up of planning units in all county administrative levels. In fulfillment of this requirements, the County Government of Lamu is pleased to present the CIDP for the planning period 2018 – 2022. As required by law, and through an aggressive public participation process, the lamu community was engaged in 50 different foras held at both the village and ward level. Through this process, the Lamu CIDP 2018 - 2022 represents the views, aspiration, priorities and needs of the Lamu County community. In addition, extensive stakeholder consultation and involvement was done in a highly participatory manner which further shaped the identified development priorities, strategies and programmes.

The CIDP 2018 - 2022 provides a good platform for strengthening the linkage between policy, planning and budgeting process. As such it consolidates the efforts of the national government and other relevant public institutions with those at the local level to bring meaningful, social, environmental, and economic development that is of benefit of local communities. Due to its integrated nature, the plan incorporates and highlights the linkage with the national development blue print - Vision 2030 and its related Medium Term Plan, Sustainable Development Goals , Agenda 2063, the National Spatial Plan 2015–2045, Sustainable Development Goals, Lamu County spartial plan including other sectoral plans that exists at both the national and county level. The plan also captures how emerging international obligations and development concepts meant to spur economic development are embraced during this planning period The specific details of how the county links will all the existing plans is outlined in Chapter two.

Chapter three of the plan for the period 2018 - 2022 provides for the review of the implementation of the previous CIDP where highlights of key achievements, challenges experienced and lessons learned are outlined. More specifically, a total of KShs 12.8 Billion was spent in implementing the CIDP of which 37 percent was spent on development while 63 perent was spent on recurrent expenditures. In the said planning period, the priority programmes comprised agriculture, health and infrastructure which were allocated 20%, 15% and 40% of the total budget respectively. Great strides was also made in promotion of Erly Childhood Education (ECD) where a total of 63 cnters were constructed county wide and xxx students are now enjoying improved access to elementary educations services. In a bid to aimprove access to social services, huge investment were also made in areas such as agricultural development extension services were provided to over 40,000 farmers and mechanization promoted through procurement and utilization of 15 tractors, 3 trailers and 15 ploughs. Establishment of county administrative unit was also given priority with a total of 10 ward administrative units constructed and operationalized. In an attempt to strengthen the County staff capacity, a total of 437 staff (224 males and 213 females) were engaged to serve in the different departments and units. In general terms the County Government of Lamu made some significant strides towards economic development and there ares several success stories that have been captured in the CIDP for the period 2018-2022 for replication and upscaling.

IN general terms, Chapter four of the CIDP 2018 - 2022 gives an in-depth analysis of the sector specific development priorities, programmes, projects and strategies as identified by stakeholders in the county through an all-inclusive participatory process. The chapter discusses spatial development framework in Lamu County. Chapter five provides a

framework through which the plan will be implemented and discusses the institutions responsible for the actualization of the plan. The chapter also outlines the resources allocated for capital projects and describes strategies for raising the revenue gap which include among others strategies to expand the revenue generation, resource sharing with the national government, means of attracting external funding.

Finally, Chapter six which is the last in the CIDP 2018 - 2022, outlines the monitoring and evaluation framework that will be used to track progress made in the implementation of projects and programmes. It also shows a proposed monitoring and evaluation structure to be used monitoring and evaluation of projects and programmes. The chapter also highlights the key objectively verifiable indicators that will be used to monitor and evaluate the level of performance.

CHAPTER 1: COUNTY GENERAL INFORMATION

1.1 Introduction

The Chapter provides a highlight of the county, situation analysis and resource endowment. It also provides a description of the County with a highlight on its history, inhabitants, location, size, physiographic and natural conditions, demographic profiles as well as the administrative and political units. It also provides a description of some of the major economic activities, an analysis of the current county situation and provides critical background information that has a bearing on the development of the county.

The chapter also provides an overview of sectoral information including infrastructure and access; land and land use; community organizations/non-state actors, crop, livestock and fish production; forestry, environment and climate change; mining; tourism; employment and other sources of income; water and sanitation; health access and nutrition, education and literacy, trade, energy, housing, transport and communication, community development and Social Welfare, public administration and governance.

1.2 Position and Size

Covering an area of approximately 6,607 km², Lamu County is located on the North coast of Kenya and is one of the six counties in the coastal region of Kenya. It borders Tana River and Garrissa counties to the southwest and north respectively. Republic of Somalia is to the northeast and the Indian Ocean to the south. It lies between latitudes 1° 40' and 20° 30' South and longitude 40° 15' and 40° 38' East. The county is divided from the rest of the Country by an extended and dry zone - the Taru desert.

The County consists of a vast mainland and 65 Islands forming the Lamu archipelago. Of these Islands, the five major ones that are inhabited include Lamu, Manda, Pate, Kiwayu, and Ndau. Lamu has a coastaline of approximately 130 km and is renowned for its rich biodiversity and unique ecosystem that combines both marine and terrestrial wildlife. The Lamu Archipelago is a significant world ecological and cultural heritage with 75% of Kenya's mangrove forests located here. The area has outstanding and endemic marine biodiversity of diverse coral reefs, sea-grass beds, sand bars, lagoons and creeks that support a lucrative fishing industry.

Being one of the earliest seaports in East Africa that attracted traders from various parts of the world. As such the County saw many visitors over its long history including traders and explorers from Portugal, India, China, Turkey and much of the Middle East whose marks are still felt in the area contributing to Lamu being recognized as UNESCO world heritage city. Much of Lamu's culture is still conserved with arts playing a crucial role in preserving the rich cultural fabric of Lamu society, from woodcarving and furniture making, to boat building and jewelry and from calligraphy to poetry.

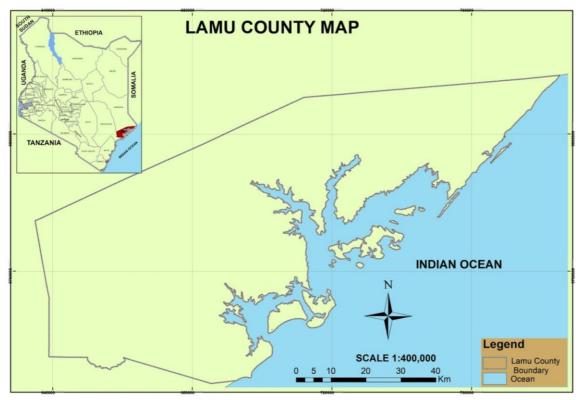


Figure 1: Lamu County Map

1.3 Physiographic and Natural Conditions

1.3.1 Physical and Topographic features

Lamu County is generally flat and lies between altitude zero and 50m above sea level with the exception of the coastal sand dunes and the Mundane sand hills which hardly exceed 100 m above sea level. The flat topography makes the county prone to flooding during the rainy seasons and periods of high tides. The flood prone areas include areas around Lake Kenyatta (Mkungunya) in Bahari Ward, along Tana River delta especially around Moa and Chalaluma areas in Witu, archipelago islands such as Pate and Manda and areas along the coastal line. Most disturbing is that, some areas of the County's mainland such as Mokowe, are below the sea level as a result of the areas being a limestone karst terrain (NEMA, 2015). The highest areas of Lamu County are around Samburu Sand Hills (GoK, 1985) and the Boni-Lungi Forest ecosystem.

The main topographic features found in the county include: the coastal plains, island plains, Dodori River plain, the Indian Ocean and the sand dunes. The coastal plain, though not extending to the coastline, creates the best agricultural land in the county. The island plain is found in the coastal, northern and western parts of the county which have good potential for agricultural development. The Dodori River plain which is in the Dodori National Reserve is home to many wildlife species. The Indian Ocean provides a wealthy marine ecosystem which supports livelihoods of the county mainly through fishing and tourism activities. The most extensive terrain in Lamu County is the Inland Plain which occupies the northern and

western-most part of the County. The inland plain is punctured with seasonal water bodies being mostly large swampy areas and lake wetlands such as Lake Mkungunya, Lake Amu and Lake Moa. The County's coastal plain covers most of the coastline but is interrupted in some areas by the coastal sand dunes (GoK, 1985).

There are four major catchment areas each with unique characteristics. They are: Dodori, Coastal zone, Duldul, the Lamu Bay drainage and Tana River catchments. The county has no permanent river but only few seasonal streams which flow from the west towards the south eastern part of the county, with none reaching the sea. The only permanent open water site in the county is Lake Kenyatta in Mpeketoni which has been known to dry during exceptionally dry years. The county also has several swamp areas occasioned by rain water with the main ones located in Dodori, BeleBele in Hindi, Ziwa la Magarini, and Chomo Ndogo - Chomo Kuu along the Hindi-Bargoni road, Luimshi and Kenza on Nairobi Ranch and Kitumbini and Ziwa la Goriji in Witu.

1.3.2 Ecological conditions

The different agro-ecological zones in the county are highly influenced by the rainfall variability patterns experience throughout the County and somehow define the natural potential of Lamu County. As such the county can be sub divided into two livelihoods zones with varying economic diversities which are distinct in terms of ecology, infrastructural network and population distribution. The zones are; the rich agricultural and livestock zones in the mainland (mainly settlement schemes) and the fishing and marine zones (Islands).

The difference in physiographic, climatic and other natural conditions therefore categorizes the county into four agro-ecological zones namely Coastal lowland (CL) Coconut-cassava zone (CL-3), Cashew nut-cassava zone (CL-4), Livestock-millet zone (CL-5) and Lowland ranching zone (CL-6). The areas under CL-3 and CL-4 are sustainable for agricultural activities whereas those under CL-5 and CL-6 are suitable for livestock keeping. The Figure 2 shows the spatial distribution of the agro-ecological zones.

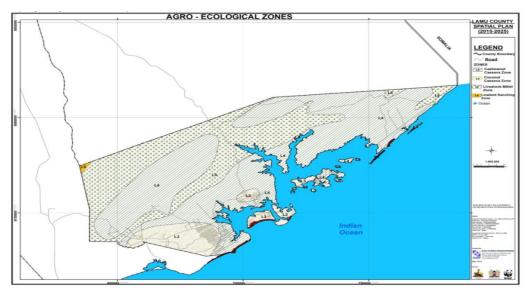


Figure 2: Spatial distribution of agro-ecological zones in Lamu county

1.3.3 Climatic conditions

The Climate of Lamu County is difficult to describe accurately because there are very few local recording stations. However, based on the Köppen-Geiger climate classification, Lamu County can be said to be between the Tropical Monsoon and Arid Steppe Hot climate. The rainfall pattern in Lamu County is bimodal and is greatly influenced by the Monsoon winds with the long rains falling between late March and early June with May being the wettest month. Light showers fall in July and decreasing from August. The short rains come in November and December decreasing rapidly to a minimum in January and February. January to March are usually dry months.

The degree of reliability of the short rains decreases from South to North. The amount of rainfall in the long rains decreases from a strip of about 10km wide from the coastline into the main land at a rate of about 100mm per kilometre. The short rains increase from the coastline for the first 10km and then decreases again. The highest average rainfall above 1000mm occurs about 5-20 km inland. It is however interrupted by the Mkunumbi Bay. Generally, rains in the County are likely to be heavy every 3 or 4 years and relatively light in the intervening periods. The highest rainfall is recorded around Lake Kenyatta settlement scheme, Hindi, immediate area surrounding Witu, and the western side of Lamu Island. The total rainfall recorded range is between 100 mm-1100 mm with . The rest of the County receives 600 mm - 700 mm with some recording less than 500 mm and these zones are suitable for development of ranches.

Temperature is usually high ranging from 23° C to 30° C. The mean annual minimum and maximum temperatures range between 24° C to 34° C. Celsius respectively. The hottest months are December and April while the coolest months are May and July. The mean relative humidity in the County is 75%. The total amount of evapo-transpiration is 2,230m per annum, with the highest values occurring in March and September and the lowest in May. The high relative humidity levels in Lamu discourage certain development land use aspects

as the proposed coal Plant under LAPSSET as the resultant emissions will be absorbed in the evaporation processes resulting to destructive rains as opposed to productive rains.

1.4 Administrative and Political Units

1.4.1 Administrative Units

Lamu county is composed of has two constituencies compeising the Lamu East and Lamu West. The county is also made of seven divisions, 23 locations and 39 sub locations as as shown in Table 1.

Table 1: Administrative Units in Lamu County

Sub- County	Division	Land Area (Km²)	Locations	Sub-Locations		
Lamu	Amu	99.7	Mkomani	Mkomani		
West			Langoni	Langoni		
			Matondoni	Matondoni		
				Kipungani		
			Shela	Shela		
	Hindi	1150.8	Hindi	Hindi		
			Magogoni	Bargoni		
			Mokowe	Mokowe		
				KIlimani		
	Mpeketoni	1727.7	Mpeketoni	Kiongwe		
				Central		
			Bahari	Bahari		
				Tewe		
			Mkunumbi	Mkunumbi		
			Mapenya	Mapenya		
				Uziwa		
			Ndambwe	Ndambwe		
			Hongwe	Hongwe		
				Bomani		
	Witu	975.4	Witu	Witu		
				Pandanguo		
			Dide waride	Moa		
				Chalaluma		
Lamu East	Faza	79.2	Faza	Kwafani		
				Kwatongani		
			Pate	Pate		
			Siyu	Siyu		
				Shanga		
			Tchundwa	Tchundwa		
	Kiaingitini	17.7	Kizingitini	Pate		
			Bwajumwali	Myabogi		
			Ndau	Ndau		
				Kiwayuu		
	Kiunga	2222.6	Kiunga	Rubu/Mambore		
	_			Mkokoni		
			Basuba	Milimani		
				Mangai		
				Mararani		
Total	7	6273.1	23	9		

Source: Ministry of Interior Coordination and National Government, Lamu County.

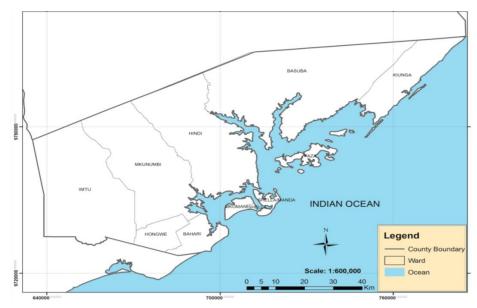


Figure 3: Administrative units in Lamu County

1.4.2 Political units

As previously stated, Lamu county has two constituencies namely; Lamu West and Lamu East. Within the two constituencies, there are 10 County Assembly Wards. Of these, Lamu West constituency has seven wards comprising Sheila, Mkomani, Hindi, Mkunumbi, Hongwe, Witu and Bahari.while Lamu East with three. Lamu East constituency on the other hand as County Assembly Wards comprising Faza, Kiunga and Busuba (see Table 2 and Figure 4)

Table 2: Area by Sub County and Wards

Sub County	Wards	Land Area (Km²)
Lamu West	Shella	54.7
	Mkomani	172.5
	Hindi	1150.8
	Mkunumbi	1366.1
	Hongwe	128.5
	Bahari	123.3
	Witu	975.4
Lamu East	Faza	79.2
	Basuba	1708.7
	Kiunga	513.9
	Total	6273.1

Source: Independent Electoral and Boundaries Commission, 2013

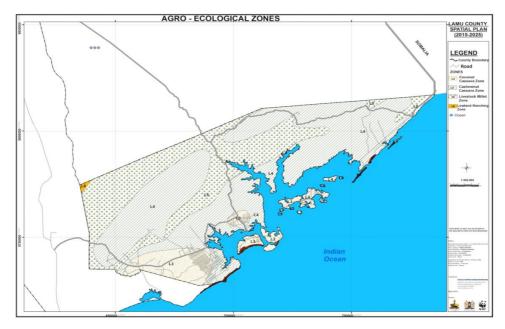


Figure 4: Spatial location of the Agro ecological zones

1.5 Demographic Features

This section presents the County population size and its composition highlighting the specific age cohorts, urban population, population distribution and density by Sub-county and their projected population sizes.

1.5.1 Population size and composition

Table 4 provides the county population data based on the 2009 Kenya Pupolation and Housing Census where there were a total of 101,539 persons comprising 53,045 males (52%) and 48,494 females (48%). In 2018, it is estimated that the population has increased to a total of 137,053 persons comprising 71,348 (52%) males and 65,705 (48%) females. Given the inter-census population growth rate of 3.3%, it is projected to increase to 155,031 by the year 2022 comprising 80,599 (52%) males and 74,432 (48%) females.

Table 3: Population projection by Age Cohort

Age 2009 (Census)			2018 (Projections)		2020 (Projections)			2022 (Projections)				
group	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-4	8,038	7,681	15,719	10,134	9,684	19,818	10,510	10,047	20,557	10,760	10,286	21,046
5-9	7,375	7,184	14,559	9,553	9,334	18,887	10,124	9,881	20,005	10,504	10,249	20,753
10-14	6,148	5,904	12,052	8,153	7,827	15,980	8,649	8,338	16,987	9,218	8,867	18,085
15-19	5,722	5,095	10,817	7,734	6,693	14,427	8,256	7,146	15,402	8,806	7,659	16,465
20-24	5,020	4,577	9,597	6,861	5,137	11,998	7,247	5,363	12,610	7,780	5,753	13,533
25-29	4,155	3,905	8,060	5,323	5,048	10,371	5,637	5,140	10,777	5,967	5,360	11,327
30-34	3,713	3,125	6,838	4,890	5,001	9,891	5,220	5,380	10,600	5,548	5,461	11,009
35-39	3,070	2,579	5,649	4,262	4,411	8,673	4,516	4,931	9,447	4,862	5,374	10,236
40-44	2,363	1,918	4,281	3,860	3,408	7,268	4,155	3,736	7,891	4,427	4,352	8,779
45-49	1,890	1,644	3,534	2,902	2,557	5,459	3,219	2,851	6,070	3,511	3,208	6,719
50-54	1,522	1,384	2,906	2,207	1,786	3,993	2,394	1,942	4,336	2,760	2,260	5,020
55-59	1,113	927	2,040	1,618	1,417	3,035	1,743	1,502	3,245	1,926	1,665	3,591
60-64	1,051	890	1,941	1,548	1,256	2,804	1,673	1,351	3,024	1,828	1,441	3,269
65-69	583	468	1,051	907	752	1,659	994	821	1,815	1,094	896	1,990
70-74	3,070	2,579	5649	678	642	1,320	727	692	1,419	820	775	1,595
75-79	228	197	425	295	275	570	313	295	608	341	324	665
80+	478	527	1005	366	457	823	369	456	825	381	482	863
85+	43	13	56	57	20	77	61	19	80	66	20	86
Total	53,045	48,494	101,539	71,348	65,705	137,053	75,807	69,891	145,698	80,599	74,432	155,031

Source: Kenya National Bureau of Statistics, 2018

The population of the county can be categorized into various age groups which includes the population under year one, under five, primary school going age, youthful population, female reproductive age, labour force and aged population.

Under 1 year: The projected number of children under the age of one year in 2009 was 3,175 while in 2018 it stands at 4,285. The population is expected to increase to 4,556 and 4,848 by 2020 and 2022 respectively. The increase in population under the age of one is attributed to decline in mortality rate (given as 76 per 1000 live births in the county compared to a national figure of 54 per 1000 live births in 2012) due to enhanced immunization programs that have been scaled up by the Health sector actors in the county and the country in general.

Under 5 year: The number of children below 5 years in 2009 was 15,719 and it inow stands at 19,818. It is however expected to increase to 20,557 and 21,046 in 2020 and 2022 respectively. This age group will face various challenges that include; immunization, protection from malaria and ensuring improved nutritional status. This requires initiating or scaling up of programmes to addressthe plight of this age group which happens to be the most vulnerable. There is need to continuously address the health and welfare issues affecting this age group.

Table 4: Population projections for selected age groups

	20	09 (Censu	s)	2018	3 (Projecti	ons)	2020) (Projecti	ons)	2022	2 (Projecti	ons)
Age group	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Under 1	1,597	1,578	3,175	2,155	2,130	4,285	2,292	2,264	4,556	2,438	2,410	4,848
Under 5	8,038	7,681	15,719	10,134	9,684	19,818	10,512	10,045	20,557	10,762	10,284	21,046
Primary school Age (6-13)	10,832	10,498	21,330	14,620	14,170	28,790	15,543	15,063	30,606	16,538	16,029	32,567
Secondary School Age (14- 17)	4,593	4,151	8,744	6,199	5,603	11,802	6,591	5,956	12,547	7,012	6338	13,350
Youth Population (15-29)	14,897	13,577	28,474	19,251	17,545	36796	20,294	18,495	38,789	21,620	19705	41325
Reproductive Age –female (15- 49)	1	22,843	22,843	1	32,255	32,255	-	34,547	34,547	ī	37,168	37,168
Labor force (15-64)	29,619	26,044	55,663	41,205	36,714	77,919	44,060	39,342	83,402	47,415	42,533	89,948
Aged population (65+)	1,822	1,668	3,490	2,459	2,252	4,711	2,614	2,394	5,008	2,782	2,547	5,329

Source: Kenya National Bureau of Statistics, 2018

Primary school population (6 -13 years): The total population of children in this age was 21,330 in 2009 and it is now 28,790. This population is expected to increase to 30,606 and 32,567 by 2020 and 2022 respectively. The entire population in this age group is expected to be in primary school courtesy of Free Primary Education (FPE) programme. This will therefore call for provision of adequate learning facilities that are well equipped and accessible thus ensuring provision of quality education. The revised age for when pupils are allowed to begin formal education also falls within this category and as such efforts have to be made in ensuring that Early Childhood Development Education (ECDE) facilities are well equipped with adequate teachers and learning materials for effective delivery of services.

Secondary school population (14-17 years): The population in this age group in 2009 was 8,744 and currently (2018) stands at 11,802. It is however expected to grow 12,547 and 13,350 in 2020 and 2022 respectively. With the transition rate of 73% and introduction of subsidized tuition fee in secondary school, a large population in this age group is expected to be in secondary school. The focus of the county is to therefore provide adequate secondary schools with necessary facilities to absorb and provide quality education. While majority of this age group are youth, special provisions have to be made by stakeholders and community in general in ensuring that interest of the youth are catered for. This will include insulating them against social vices such as drug abuse, early marriages and access to pornography.

Youth population (15-29 years): The population in this age group was projected at 28,474 in 2009 and at the time it constituted 28 percent of the county population. The population in this age group is expected to increase to 36,796 from the current and 38,789 in 2020 and 2017 respectively. This age group that consists of youth both in school and out of school face various challenges. The youth need skills to be able to engage in gainful employment and should be insulated against contracting HIV and AIDS, and indulging in drug and substance abuse, protecting them from early marriages, prostitution and unwanted pregnancies. This

can be achieved by ensuring that youth are occupied through sports activities, skills development and acquisition of gainful knowledge through the various channels of communication such as internet, radio programmes and youth centres.

Female reproductive age group (15-49 years): The number of women in this age group in 2009 stood at 22,843 constituting 23% of the county population. This group, which currently stands at 32,255, is expected to expand to 34,547 and 37,168 by 2020 and 2022 respectively. Women in this category will require access to specific services such as maternity and family planning. The women, most of whom constitute the rural population, also form the backbone of the Agricultural and Trade Sector. They face the full brunt of the triple burden in their role of production, reproduction and performing community work. The challenge is therefore to ensure that women in the reproductive age group are given ample opportunities to play their roles.

Labour Force Age Group (15-64 Years): This group was projected to be 55,663 persons in 2009 and now (2018) it stands at 77,919. It is projected that the number will expand to 83,402 in 2020 and 89,948 by 2022. This calls for improvement in agriculture and investment in other sectors to provide employment opportunities for the increasing labour force.

Aged population (65+): The aged population (over 65 years) was projected to be 3,490 in 2009 and now (2018) it stands at 4,711. It is projected that the number of this group will increase to 5,008 by 2020 and 5,329 by 2022. This calls for investment in programmes to support the older persons through mechnisms suc as increased allocation to cash transfer funds for the aged and other relevant initiatives to ensure that they receive adequate health care and nutritional attention. Policies such as the voucher system need to be rolled out to enlist all the vulnerable members of this age group to minimise dependency.

1.5.2 Urban population

Amu Town which is the main urban centre in the county, had a projected population of 18,609 in 2012 which constituted 16% of the county population. Currently (2018) the population in Amu stands at 22,721 persons. It is anticipated that the population will grow to 24,154 and 25,701 by the years 2020 and 2022 respectively. This can be attributed to the fact that the town has relatively better infrastructural facilities in terms of banking facilities, accommodation and internet access and serves as the tourism centre. The rise of urban population is expected create additional demand for essential social services and urban infrastructure. This calls for prior planning of available resources and expansion of social and economic facilities in the urban areas to accommodate the expanding population. This increasing population will also lead to increased demand for agricultural and industrial products, triggering increased investment in those sectors.

Table 5: Population projection by Urban Centre

Urban Centr	Proj	ections 2018		Pr	ojections 20	20	Pr	ojections 2	022
e	Male	Female	Total	Male	Female	Total	Male	Female	Total
Amu	11,427	11,294	22,721	12,148	12,006	24,154	12,926	12,775	25,701

Source: Kenya National Bureau of Statistics, 2018

1.5.3 Population Density and Distribution

The population distribution in the county is influenced by a number of factors including access to economic opportunities such as agriculture, livestock keeping, fishing and trade. This trend can be demonstrated by the fact that over 50 percent of the county population lives in Amu and Mpeketoni in Lamu West Constituency, whereas Lamu East Constituency accounts for 17 percent of the county population. Witu that is predominately a livestock zone is occupied mainly by the Orma community. Mpeketoni, Hindi and some parts of Witu are settlement schemes and are predominantly agricultural cosmopolitan areas. Besides Lamu, the other islands comprising Pate, Kizingitini, Ndau and Siyu are mainly occupied by the Bajuni community. Kiunga is inhabited by the Boni and Bajunis communities.

Table 6 gives the county population distribution based on constituencies, including projected population density. Kizingitini Division is the smallest division with 18.1 Km² but has currently (2018) the highest population density of 622 per persons per Km² followed by Amu and Faza Divisions with 295 and 119 persons per Km² Kiunga and Hindi divisions, on the other hand, have low population densities of three and eight persons per Km² respectively. The low density in Kiunga, Witu and Hindi can be attributed to poor infrastructure, lack of essential services and a long history of insecurity in the area.

Table 6: Projected population densities by Sub County

Sub County	Division	Area	20	09	201	18	20)20	20)22
Sub County	Division	Km ²	Pop.	Density	Pop	Densit y	Pop	Density	Pop.	Density
Lamu West	Amu	102.4	22,366	218	30,189	295	32,093	313	34,148	335
	Hindi	1804.9	10,700	6	14,,442	8	15,353	9	16,337	9
	Mpeketoni	1360.7	36,527	26.8	49,303	36	52,413	39	55,770	41
	Witu	1235.7	13,105	10	17,689	14	18,804	15	20,009	16
Lamu East	Kizingitini	18.1	8,346	461	11,265	622	11,976	662	12,743	704
	Faza	74.8	6,577	88	8,877	119	9,437	126	10,042	134
	Kiunga	1570.1	3,918	2	5,288	3	5,622	4	5,982	4
	Total	6474.7	101,539	16	137,053	21	145,698	23	155,031	24

Source: Kenya National Bureau of Statistics, 2018

1.5.4 Demographic Dividend

Demographic dividend is defined as the accelerated economic growth that a county can experience as a result of declining fertility levels that occasion a reduction in the dependency levels and an increase in the proportion of the population in the working ages (15-64 years). As such, with the reducing number of dependents who need support, those in the working ages will essentially have more savings that can potentially be invested for economic growth of the county thus improving the overall wellbeing of the county's residents. The attainment of a demographic dividend is not automatic as the county needs to make simultaneous strategic investments in health, education, economic and governance sectors as the fertility levels decline. The aim of these investments is to ensure that as the county's children and youth get older, they remain healthy and are able to access education and training opportunities. Consequently as they enter the labour force they are able to get income and employment opportunities, invest for their life in old age, and they participate productively in

matters affecting the county.

Table 7: Demographic Dividend Potential

Indicator	2009	2014	2017	2020	2022	2030
Population Size	101,486	112,858	120,230	127,972	133,308	155,140
Population below 15 (%)	41.71	39.77	38.01	36.33	35.11	33.42
Population 15-64 (%)	54.85	56.89	58.92	60.48	61.82	62.85
Population above 65 (%)	3.44	3.34	3.07	3.18	3.07	3.73
Dependency ratio	82.32	75.79	69.72	65.34	61.76	59.10
Fertility rate	4.60	4.30	4.10	4.00	3.90	3.50

1.6 Human Development Approach

The human development approach emerged in response to the growing criticism of the use of economic development as a measure of the standard of living. The approach examines broader human development issues and is concerned with both building up human capabilities and with using those human capabilities fully. It underlines the expansion of opportunities so that the disadvantaged can do more for themselves through economic, social and political empowerment.

Human development approach recognizes that there is no automatic link between economic growth and human development. The link has to be made through deliberate policies at all levels. Economic growth is necessary to enlarge human choices but not sufficient. Economic growth provides resources to support health care, education, and advancement in other Millennium Development Goals (MDGs). In turn, achievements in human development make critical contribution in assuring quality human capital to spur economic growth via productivity gains.

The use of Human Development Index (HDI), normally in the Human Development Reports (HDR) as a measure of a country's development is a composite index measuring average achievement in three basic dimensions of human development to reflect a country's achievements in health and longevity (as measured by life expectancy at birth), education (measured by adult literacy and combined primary, secondary, and tertiary enrolments), and living standard (measured by GDP per capita in purchasing power parity terms). Achievement in each area is measured by how far a country has gone in attaining the following goals: life expectancy of 85 years, adult literacy and enrolments of 100 percent, and real GDP per capita of \$40,000 in purchasing power parity terms.

National human development reports provide a tool for analysis, reflecting people's priorities, strengthening national capacities, engaging national partners, identifying inequities and measuring progress at country level. The basic objectives of NHDRs are to raise public awareness and trigger action on critical human development concerns, strengthen national statistical and analytic capacity to assess and promote people-centred development; and shape policies and programmes by providing options and broad recommendations based on concrete analysis. It would be important in future, for counties to measure their development by calculating and using the specific HDI and GDI.

CHAPTER 4: COUNTY DEVELOPMENT PRIORITIES AND STRATEGIES

4.1 Introduction

The chapter focuses on the county development strategies giving the current overview in relations to developmental thematic areas as well as the proposed policy strategy to address the thematic areas. The natural resources have been documented under their respective sectors to capture the county natural endowment, giving an overview of the dependent sectors and the status of resource utilization and opportunity for optimal resource utilization.

The chapter also, highlights development priorities by sector giving sector vision, mission, sector values and objectives. Sector development needs and areas of prioritization and strategies have also been highlighted. It details the future programmes and projects to be implemented in the second generation CIDP 2018-2022.

Lastly, the chapter makes an overview of the key flagship/transformative projects whose implementation will have high impact in terms of creation of employment, increment of county competitiveness, revenue generation and cross-county engagements and will go in realizing the dream of 'Making lamu a prosperous county offering a high quality of life for its people".

4.2 Development Priorities and Strategies

This section gives a summary of the development priorities identified in the sectors from the spatial plan, sectoral plans and during stakeholder's consultative forums. The development priorities, programmes and projects are clearly linked to the Kenya Vision 2030, MTP, County Transformative Agenda, as well as strategies identified in the spatial development framework. Emphasis is given to programmes and Projects aimed at fulfilling Article 56 of COK, achieving the aspirations of Sustainable Development Goals (SDGs) and African Union Agenda 2063 among others.

4.2.1 Agriculture, Rural and Urban Development

Introduction

The Agriculture Rural and Urban Development Sector is one of the 9 sectors being included in the CIDP for the period 2018/2022. The sector is composed of crops, livestock production, fisheries, lands and physical planning subsectors that target to achieve food security and improved nutrition. The sector therefore intends to focus on three broad areas, namely; enhancing large-scale production; boosting smallholder productivity; and reducing the cost of food among others.

Vision

A food secure, wealthy and prosperous county with efficient, sustainable and manageable land use.

Mission

To promote and facilitate the development and management of land resources; crop, livestock and fisheries husbandry; crop and livestock pest and disease control; and agro-based industries

Goal

To achieve proper landuse, food security, wealth and employment creation, and poverty reduction in Lamu County.

Sector/subsector needs, priorities and strategies

- Improving market access and trade of produce from livestock fisheries and crops
- Improving range resource management and conservation
- Improving productivity and output in the agricultural sector
- Strengthening institutional capacity
- Creating enabling environment for agricultural development
- Efficient and sustainable land use
- Developing and managing blue economy
- Mainstreaming climate change and other cross cutting issues in agriculture and rural development.

4.2.1.1 Agriculture Sub-sector

The crop agriculture sub sector during the next phase of CIDP intends to implement four programmes: administrative planning and support services; extension advisory services; crop production and productivity improvement; and value addition and marketing. The development priorities and strategies will be on human resource development and management; administration support services; provision of farmer advisory services; improvement of the agricultural training centre; farm mechanization; on-farm irrigation; farm inputs access; pest and disease control; climate change adaptation in agriculture; agriculture sector development support; processing of crop produce; and agricultural marketing and information dissemination. The prioritized areas during the next five years will be funded by the county government, national government and other stakeholders to achieve food security, employment creation and poverty alleviation in the county.

4.2.1.2 Fisheries Sub-sector

The fishery sub-sector contributes over 70% incomes to households in Lamu especially in Lamu East sub-county. The sub-sector is therefore a major economic driver generating incomes, wealth and employment to the residents of Lamu. It is estimated to have an annual turnover of over 1.5 billion to the county's economy as direct in flows or from other fisheries related activities including local trading in fish and fisheries products, manufacturing, processing and export. The sub-sector's transformative agenda for 5 years period will entail allocation of resources to projects identified across the 10 wards, under fisheries development service as the main programme. The key areas of delivery at sub-programme level are:-

1. Fisheries production and productivity

- 2. Fisheries infrastructural development,
- 3. Product development and marketing
- 4. Fisheries extension and training

Efficient use of resources allocated towards achieving the objectives of the department will help transform form the sub-sector from artisanal/subsistence based fishing economy to semi industrial fisheries with the county reaping maximum benefits from its marine and other fisheries resources. The mandate of the department is management, development and conservation of all fisheries resources.

4.2.1.3 Livestock Sub-sector

The Livestock production sub sector will implement one programme with four sub-programmes. The programme is livestock production and productivity and the sub-programme are livestock extension, livestock production improvement, livestock marketing, trade and value addition and range resource management and development to address three value chains mainly indigenous chicken, beef and dairy value chains. The programmes are geared toward achieving fod security, income generation and employment. The livestock production prioritized areas will be funded by the county government, national government and other stakeholders to achieve food security, employment creation and poverty alleviation in the county.

4.2.1.4 Veterinary Sub-sector

Veterinary department is a sub-sector in the livestock larger Agriculture, rural and urban development (ARUD) sector. The livestock subsector contributes 40% in the income of the people of Lamu County. 30% of the human populations in Lamu are directly or indirectly employed in the sub sector. The livestock population is distributed in the two sub-counties i.e. Lamu East and Lamu West sub counties with the larger population being in Lamu West. Livestock species include Cattle, Sheep, Goats, donkeys and poultry. Other emerging livestock include bees and ostrich which are wild but are currently being domesticated. The sub-sector's transformative agenda for 5 years period will entail allocation of resources to projects identified across the 10 wards, under five Veterinary development services as the main programme. The key areas of delivery at sub-programme level are:-

- 1. Livestock health improvement
- 2. Veterinary public health
- 3. Artificial Insemination
- 4. Promotional of Livestock Export Zone
- 5. Animal welfare and hides, skins and leather development

Fisheries Sub-Sector

7									
Programme Name: General Administration, planning and support services	eneral Administ	tration, planniı	ng and support ser	vices					
Objective: Improved service delivery	service delivery								
Outcome: Efficient and effective Fisheries, Livestock and cooperatives service delivery	nd effective Fish	eries, Livestocl	and cooperatives	service del	ivery				
Sub Programme1	Key outcome	Baseline	Key performance			Planne	anned Target		
			indicators	Year 1	Year 2	Year 3	Year 4	Year 5	Total Budget (KShs)
Human resource capacity	Skilled and	No of staff with	54	59	65	70	80	86	87.6M
building and	knowledgeable	skills and							
development	work force	knowledge							
	offering high	offering high							
	quality services	quality services							
Construction and	Conducive	No of offices	7	7	8	10	12	14	42M
refurbishment of offices	working	constructed or							
	environment for	refurbished,							
	all categories of	fully equipped							
	staff	and operational							
Transport enhancement	Timely and	% increase in	50%	50%	65%	80%	85%	90%	72.2M
	Efficient service	field outreach							
	delivery	activities and							
		client contact							
		time							
Project planning and	Timely planning	No of annual		1	2	3	4	5	5M
implementation	and	development							
	implementation	plans developed							
	of projects	and							
		operationalized							
	Effective M&E	No of Quality	0	1	2	သ	4	5	
	systems	M&E							
	internalized in all	frameworks							
	programmes and	developed and							
	projects	operationalized							

210,230,000	IOIALS								
210 250 000	TOTALS								
							shared	milestones	
							developed and	activities and	
							materials	of departmental	
							communication	communication	
	10	7	5	ω		0	No of	Effective	
							facilities.		
							and other office	other accessories	
							with ICT tools	equipments and	
							well equipped	office	Technology
3.45M	100	90	80	70	50	40%	% of offices	High quality ICT % of offices	information Communication
(KShs)									
Total Budget	Year 5	Year 4 Year 5	Year 3	Year 2	Year 1	indicators			
		nned Target	Planned			Key performance	Baseline	Key outcome	Sub Programme1
				very	service deliv	∢ and cooperatives	eries, Livestocl	ınd effective Fish	Outcome: Efficient and effective Fisheries, Livestock and cooperatives service delivery
								l service delivery	Objective: Improved service delivery
					vices	ng and support ser	tration, plannir	General Adminis	Programme Name: General Administration, planning and support services

Programme Name: Fisheries Development services	heries Developme	nt services							
Objective: To provide for effective Fisheries management, conservation, development and util	or effective Fishe	ries manageme	nt, conservation, de	velopment	and utiliza	tion of fishe	ries resource	lization of fisheries resources in the County	nty
Outcome: sustainable production and increased incomes and revenues to fisher folk and coun	roduction and in	reased income	s and revenues to fi	sher folk a	nd county g	ty government			
Sub Programme1	Key outcome	Baseline	Key performance			Plar	Planned Target		
			indicators	Year 1	Year 2	Year 3	Year 4	Year 5	Total Budget (KShs)
Fisheries production and productivity	Increased landing of highly valued fish	Increase tonnage of fish harvested and landed annually	2,500 tones	3,000	3,500	4,000	4,7000	5,600	254,000,000
	Increased use of modern technologies in fishing	% increase in uptake and use of technology in fishing	10%	15	18	25	30	35	
Fisheries infrastructural development	Improved fish preservation, handling sanitation and hygiene	% increase in fish preservation and handling facilities	40%	50	60	80	85	90	125,000,000
Product development and marketing	Improved quality of fish and fish products	Tonnage of value added fish products	20 tones	25	40	55	60	70	48,000,000
	Improved market access for fish and fish products	% of fish and fish products accessing highly competitive fish markets	5%	10	20	25	30	35	

Totals 484,000,000	Totals								
	40	30	25	20	10	5%	% of fisher folk using improved technologies in fishing and fisheries related activities	Improve uptake and use of technologies in fisheries	
57,000,000	80	60	50	35	20	5%	% of fishers whose skills and knowledge have been enhanced	Enhanced skills and knowledge of fisher folks	Fisheries extension and training
Total Budget (KShs)	Year 5	Year 4	Year 3	Year 2	Year 1	Key performance indicators	Baselme	Key outcome	Sub Programme1
			overnment	nd county g	sher folk a	s and revenues to fi	creased incomes	production and in	Outcome: sustainable production and increased incomes and revenues to fisher folk and county government
nty	s in the Cour	ries resources	tion of fishe	and utilizat	velopment	nt, conservation, de	ries managemei	for effective Fishe	Objective: To provide for effective Fisheries management, conservation, development and utilization of fisheries resources in the County
							nt services	heries Developme	Programme Name: Fisheries Development services

Annex FR4

Lamu County, Lamu County Climate Risk Profile, 2017

Kenya County Climate Risk Profile Series

Climate Risk Profile Lamu County

Highlights

- Agriculture is a vital sector in Lamu County, contributing approximately 90 percent of household incomes, however production is mostly small scale, on an average of four (4) ha land holdings and highly dependent on rain fed agriculture. Only 24 percent of the farmers have title deeds, and this limits investments on land and access to services like credit.
- Delayed and erratic rains have led to a decline in productivity with extended droughts culminating in crop losses, scarcity of fodder and destruction of inshore fish breeding grounds.
 - Poor road infrastructure have led to high input costs as well as poor access to inputs, markets, and extension services. Recent security challenges have interfered with agriculture extension activities, night fishing, and marketing of agricultural products reducing farmer resilience to hazards.
 - Crop related adaptation strategies include use of drought-tolerant varieties, fast-maturing crop varieties, establishing local nurseries, conservation agriculture and irrigation using river water, shallow wells, and water pans, although the low-lying flat land and sandy soils constrain irrigation initiatives. Contract farming should be promoted more vigorously to ensure farmers have ready buyers for their produce. This could also aid in access to finance and inputs. Establishment of local packaging and processing facilities as well as continued capacity building of farmers would also be crucial for long-term resilience building.
 - Fishing in breeding zones to catch the smaller fish is a common coping strategy, while use of ice and sun drying for preservation of fish during sales and marketing are also practiced. Longer term strategies should involve development of large fish processing and cold storage facilities and financial and technical capacity building of fishers on cage culture (for example for prawns) and fish value addition. Deep-sea fishing has become necessary due to high high competition and dwindling near shore fish stocks.
 - In chicken production, common coping strategies include home feed production, allowing free ranging, home slaughter and consumption, and group marketing. More needs to be done to improve slaughterhouses and chicken processing facilities, while also developing cold storage facilities.
 - Farmer coping strategies and adaptation efforts are bolstered by County government support towards extension, seed provision, access to weather information and community irrigation projects. The National Drought Management Authority (NDMA) coordinates and provides early warning information for use by different agencies and government departments. The County government, Northern Rangelands Trust (NRT), and World Wide Fund for Nature (WWF) have elaborate capacity building initiatives that promote sustainable and conservative use of terrestrial and marine resources. The county government revolving fund is helping fishermen to acquire bigger boats with bigger engines to be able to venture into deep-sea fishing.
 - The role of the National Environmental Management Authority (NEMA) and the Kenya Meteorological Department (KMD) has not been strongly realised in the county. Additionally, the Agricultural Sector Development Support Programme (ASDSP) through the Participatory Scenario Planning (PSP) project has not fully taken off. These stakeholders and programme are instrumental in climate resilience and their work needs to be supported.







List of acronyms

A.S.L Above Sea Level
AEZ Agro-ecological zones

AFD Agence Française de Dévelopement

AI Artificial Insemination

ASDSP Agricultural Sector Development Support Programme

BMU Beach Management Unit

CCPP Contagious Bovine Pneumonia, Contagious Caprine Pleuropneumonia

PPR Peste des Petits Ruminants
CDF County Development Fund

CMDRR Community Managed Disaster Risk Reduction
DANIDA Danish International Development Agency

ECF East Coast Fever

ERA Economic Review of Agriculture

FMD Foot and Mouth Disease GoK Government of Kenya

IPCC Intergovernmental Panel on Climate Change

KALRO Kenya Agricultural and Livestock Research Organization

KCSAP Kenya Climate-Smart Agriculture Project

KES Kenya Shillings

KFS Kenya Forestry Service

KMD Kenya Meteorological DepartmentKNBS Kenya National Bureau of StatisticsKRDP Kenya Rural Development Program

KWS Kenya Wildlife Service LSD Lumpy skin disease

MT Metric tons

NCCAPNational Climate Change Action PlanNCCRSNational Climate Change Response StrategyNDMANational Drought Management AuthorityNEMANational Environment Management Authority

NGO Non-governmental Organization
NRT Northern Rangelands Trust
PSP Participatory Scenario Planning

SMS Short Message Service

TIMPs Technologies, Innovations and Management Practices

VCC Value Chain Commodity

WARMA Water Resources Management Authority

WWF World Wide Fund for Nature



Foreword

Climate change is becoming one of the most serious challenges to Kenya's achievement of its development goals as described under Vision 2030. Kenya is already highly susceptible to climate-related hazards, and in many areas, extreme events and variability of weather are now the norm; rainfall is irregular and unpredictable; while droughts have become more frequent during the long rainy season and severe floods during the short rains. The arid and semi-arid areas are particularly hard hit by these climate hazards, thereby putting the lives and livelihoods of millions of households at risk.

In 2010, Kenya developed a National Climate Change Response Strategy (NCCRS), which recognized the importance of climate change impacts on the country's development. This was followed by the National Climate Change Action Plan (NCCAP) in 2012, which provided a means for implementation of the NCCRS, highlighting a number of agricultural adaptation priorities. The focus of these initiatives has been at the national level, there is need to mainstream climate change into county level policies, programmes, and development plans; therefore ensuring locally relevant, integrated adaptation responses with active involvement of local stakeholders.

The Government of Kenya (GoK) through the Ministry of Agriculture, Livestock and Fisheries (MALF), with funding by the International Development Agency (IDA-World Bank Group) is therefore implementing the Kenya Climate-Smart Agriculture Project (KCSAP). This projects objective is to increase agricultural productivity and build resilience to climate change risks in targeted smallholder farming and pastoral communities in Kenya, and in the event of an eligible crisis or emergency, to provide immediate and effective response. This Climate Risk Profile has been conducted within the framework of KCSAP and aims to inform county governments and stakeholders on the climate change risks and opportunities for agriculture so they are able to integrate these perspectives into county development.

This document presents the Climate Risk Profile for Lamu County with a climate vulnerability index of 0.159¹. Despite the low vulnerability, Lamu has suffered several extreme weather events including dry spells, floods and high temperatures, which have put livelihoods of the people at risk. Assessment of historic climate data shows that there has been a

significant change in the climate in the county over the last 35 years, where precipitation has increased, with more variability, and temperatures in the Indian Ocean increasing by 0.2°C per decade. The climate variation has contributed to food insecurity where for instance in 2016 approximately 40 percent of the children below 5 years were malnourished due to poor agricultural production, and impaired fishing, scarcity of water, and livestock deaths. There has been a remarkable decline production of sorghum, sesame, and maize, attributable to the climate variation. For instance, maize production has reduced from 7-8 bags per acre in the early 1990s to 2-3 bags² per acre at present. The 2017 drought left more than 50,000 residents and approximately 300,000 livestock at the verge of starvation³, whereas some areas namely Bonini, Kiunga and Merina in Lamu East experienced floods that displaced about 500 families⁴, In response to the effects of extreme weather events, a number of interventions including provision of food relief, promotion of Vitamin A and Zinc supplementation and promotion of drought-tolerant crop varieties have been implemented. Increasing the scale of the current resilience-related technologies and interventions while addressing institutional weaknesses that hinder their adoption will go a long way in ensuring sustainable livelihoods in the face of climate variation and change.

The profile is organised into six sections, each reflecting an essential analytical step in understanding current and potential adaptation options in key local agricultural value chain commodities. The document first offers an overview of the county's main agricultural commodities key for food security and livelihoods as well as major challenges to agricultural sector development in the county. This is followed by identification of the main climatic hazards based on the analysis of historical climate data and climate projections including scientific assessment of climate indicators for dry spells, flooding and heat stress among other key climate hazards for agriculture. The document continues with an analysis of vulnerabilities and risks posed by the hazards on the respective value chains. Based on these vulnerabilities, current and potential on-farm adaptation options and off-farm services are discussed. The text also provides snapshots of the enabling policy, institutional and governance context for adoption of resilience-building strategies. Finally, pathways for strengthening institutional capacity to address climate risks are presented.

¹ Source: GoK; WFP (2013).

² http://kulima.com/wp-content/uploads/2011/03/Climate-Vulnerability-and-Capacity-Analysis-of-the-Lamu-Sea-Landscape.pdf

³ http://www.nation.co.ke/counties/lamu/Lamu-cancels-food-expo/3444912-3820120-format-xhtml-12i00qdz/index.html

⁴ http://www.the-star.co.ke/news/2017/05/19/lamu-families-left-in-the-cold-after-floods-sweep-away-homes_c1563679

Agricultural context

Economic relevance of farming

Lamu County is one of the six coastal counties in Kenya. It borders Somalia on the northeast, Garissa to the north and the Indian Ocean to the south. The county is composed of the mainland and 65 islands forming the Lamu archipelago. The land is generally low-lying and flat with the highest level being 50 m above sea level (a.s.l). Agriculture is a key sector of the Lamu economy, contributing 90 percent of the total household incomes. The key sub-sectors under the agriculture sector are crops, livestock, and fisheries (GoK, 2017a). The main crops grown are maize, cowpeas, dolichos, cassava, pigeon peas, and green grams. Mangoes, coconut, cotton, bixa, and simsim are produced for commercial purposes. Cotton is the most important commercial crop in the county, contributing 42 percent of the household income. Cattle, sheep, goat and poultry are the most common livestock reared in this county. Thirty percent of the county's population depends on livestock directly or indirectly (GOK, 2017b). Fishing is also an important economic activity in the county providing food and employment; engaging 3,500 artisan fishermen (GoK, 2017ы).

People and livelihoods

According to the Kenya National Bureau of Statistics, (KNBS), Lamu had a population of 101,539 in 2009. Males and females constitute 52 percent (53,045) and 48 percent (48,494) of the population respectively. This population is projected to reach 137,180 by 2017, with males constituting 52 percent (71,664) and females 65,515 (48%). Lamu the only urban center in the county had a population of 16,833; half were females. The statistics projected urban population in the county to increase to 21,994 in 2017 with 11,062 males and 10,932 females. Eighty-three percent of the population live in rural areas. It is estimated that 32 percent of the total Lamu population are poor (GoK, 2015). The poverty levels are higher in the urban areas (45 percent) and comparatively low in the rural areas 29 percent (GoK, 2017a). In 2016, approximately 60 percent of the population of Lamu West and 66 percent of that of Lamu East needed food assistance (GoK, 2017a). Approximately 64 percent of the maleheaded households were food insecure compared to 11 percent of the female- headed households. Amongst the children in Lamu, 29 percent are stunted while 4.2 percent were wasted (GoK, 2014b).

The county's main sources of water are groundwater, surface water, rain water, and desalinized seawater. Most of the places have saline underground water. Fifty-five percent of the population have access to clean drinking water. Households that have access to piped water account for 31 percent of the population of the county. Seventeen percent of the population use electricity for lighting while 72 percent use paraffin. The main sources of cooking fuels are firewood and charcoal, electricity, gas (LPG) and paraffin. Firewood and charcoal is used by 71 percent of the population (GoK, 2017a). The county has a literacy level of 67 percent. It has a 92 percent pre-school enrolment rate compared to the national average of 72 percent. Gross enrollment rates in primary and secondary schools are 75 and 43 percent respectively. The transition rate from primary to secondary school is 73 percent while the secondary school completion rate is 94 percent (GoK, 2017a).

Economic activities of the county hinge around agriculture, livestock, fisheries, forestry, mining, and tourism. Agriculture is the main sector, engaging 73 percent of the population. The livestock sector is also key, as it is a means of livelihoods for about 30 percent of the population. The county benefits greatly from the Indian Ocean, which supports about 75 percent of the county's fishing, estimated to yield 1500 MT per year. The key tourist attraction areas are the Boni-Dodori national reserve, Kiunga Marine reserve, Takwa and Pate ruins, the Maulid, and Lamu cultural festivals. The Bajuni and Boni people depend on the forest as a source of food; they also sell honey and other wood products. Forty-five percent of the population's labour force is in the informal sector while 15 percent is in the formal Sector. Sixty-five and 88 percent of the males and females are actively involved in economic activities of the county.

Agricultural activities

The total land area of Lamu County is 6273.1 km² (627,310 ha) of which 5,517 km² (551,700 ha) is arable and 308 km² (30,800 ha) is under water mass. Thus, over 80 percent of the land in Lamu is arable and can be used for agricultural purposes (GoK, 2014a and GoK, 2017a). Forests cover about 12 percent of the land. Gazetted forests include the mangroves and Witu Forest while non-gazetted ones are Lunge, Boni Forests and Lake Kenyatta buffer zone. Of the total arable land, 56,923 ha is being utilised; 21,311 ha is under food crops, 22,476 ha under cash crops, and 13,136 ha is under farm forest (GoK, 2017a). Lamu County is amongst the coastal counties that are

experiencing land ownership problems. A big portion of land is not registered and is held under ancestral ownership; only 20 percent of the farmers have title deeds (GoK, 2017b).

The main agricultural areas are Mpeketoni, Witu, and Hindi Divisions. In these areas, the average land ownership is 10 ha. However, the average land size in the whole county is 4ha per household. The main food crops produced are maize, cowpeas, grams (green and black), finger millet, cassava, and pigeon peas. The county also produces mangoes, coconut, cotton, bixa and simsim as cash crops. Cotton has much potential and is the highest income earner amongst the cash crops, contributing 42 percent to household incomes. Those living in the Lamu peri-urban areas practice subsistence farming (GoK, 2014a).

Livestock production is another important component of agriculture; the most popular animals reared are cattle, sheep, goats, donkeys and poultry. Most of the livestock are produced under small-scale production. There are 20 ranches in the county, 5 covering 65620 ha are operational, 7 covering 81,420 are nonoperational, 3 of 56,000 ha are idle, and 5 equivalent to 56,000 ha are proposed. These ranches act as grazing reserves and are used by pastoral farmers from Lamu County as well as from the neighbouring Garissa County. Fishing is the main economic activity for the

residents of the Island. There are approximately 40 fishing grounds in the county with a rich diversity of fish species; with a potential of about 1,500 metric tons of fish per annum. However, the current production is low due to factors such as lack of fishing equipment. The county fisheries department is introducing cage fish farming to increase catches and foster sustainability.

Most of the farming in Lamu is rain-fed; approximately one percent of the households undertakes irrigation farming. The main areas where irrigation is practiced are Zebra, Sina mbio, Mpeketoni, and around the Tana Delta. The use of fertiliser is still low in this county. According to the Agriculture Sector Development Support Programme (ASDSP) 7 and 9 percent of the farmers use basal chemical fertiliser and manure during the first and the second season respectively. Approximately 10 percent of the farmers used top dressing fertiliser in the first season and 16 percent in the second season. Ten percent of the farmers use

herbicides in both seasons. In the first season 31 percent use field pesticides, this proportion is much higher in the second season at 57 percent. A considerable proportion of the farmers, 31 percent in season 1 and 28 percent in season two, used postharvest pesticides mainly for storage. Input use is higher in season two compared to season one (GoK, 2014a).

Agricultural value chain commodities

A broad diversity of agricultural commodities are grown in the county. Of these, various value chains have been prioritised as being strategic for the county as indicated in the County Integrated Development Plan (CIDP) and the Agriculture Sector Development Support Programme (ASDSP) as well as by government institutions such as the Kenya Agricultural and Livestock Research Organization (KALRO). For the development of this County Climate Risk Profile, four major value chain commodities (VCCs) were selected for in-depth analysis based on: prioritization in county frameworks and programmes; economic value (KES/ bag or KES/livestock or KES/unit livestock product)⁵; resilience to current weather variability and future climate change⁶; and number of economically active people engaged in the commodity's value (including vulnerable groups, women, youth, and the poor⁷). The VCCs selected are cotton, cashew nuts, local chicken, and fish.

Cotton

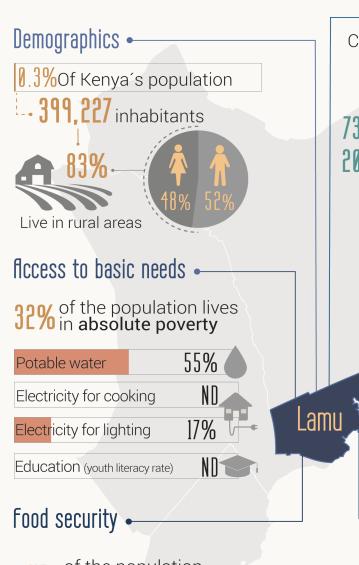
Cotton is an important cash crop for Lamu County as it contributes 42 percent of household income. The crop is mainly produced in Lamu West and a few areas in Lamu East. In Lamu West, production is in Witu, Mkunumbi, Hongwe, and Bahari while in Lamu East it is grown in Kidurunu area of Basuba. Small-scale, commercial rain-fed system of 0-2 ha is the main production system either as a pure stand or in mixture with another crop. Such systems exist in all the cottongrowing areas in Lamu West. In Lamu East, the farmers practice the pure stand production system. Despite most of the crop being produced in Lamu West, there is potential for increased production in Lamu East as well. The land under cotton production has been varying over time. A total of 6,849; 7,922; 2,944; 5,159; and 5,170 ha were under cotton cultivation in 2011, 2012, 2013, 2014 and 2015 respectively. Yields have also varied over time; in 2011, the average yield

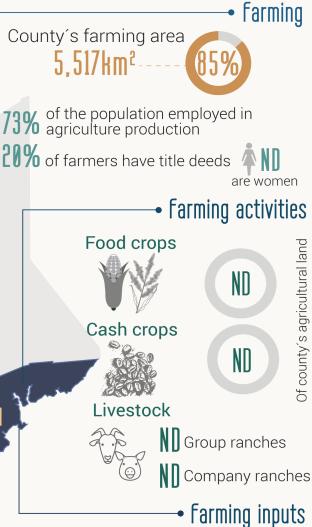
⁵ As stated in the 2015 Economic Review of Agriculture (ERA)

Resilience is as defined in IPCC (2012), where we consider the general risks posed by climate change in the county. Value chains that are perceived to survive the local conditions under the current production systems, other factors being constant (including variations in technology adoption rates among farmers/pastoralists) are considered

Categorisation of "poor" people was based on workshop participant perceptions and not on any standard index normally used to measure poverty.

Livelihoods and agriculture in Lamu





of the population suffers from food poverty



of household income spent on food



People undernourished

Children stunted

Children wasted

ND: No data

Infographic based on data from the County Integrated Development Plan (GoK, 2013), the Agricultural Sector Development Support Program (GoK, 2014), and Kenya National Bureau of Statistics (KNBS, 2015)

Water uses









Fertilizer types (% of households)



/ % / %

Organic manure

% Planting fertiliser% Top dress fertiliser

Pesticide types (% of households)



15% 31% Field pesticides

Storage Pesticides

Herbicide

was 0.28 Mt/ha. It has increased steadily to 1.5 Mt/ha in 2015; and was valued at KES 325,710,000.

The main actors in the cotton value chain are farmers, the government, farm input suppliers, casual labourers, and ginners. Farmers are the producers who source seed and extension services from the county government. The national government supplies seeds through the county government. The crop uses much casual labour in land preparation, spraying, and harvesting. Input suppliers supply pesticides and other inputs to farmers. Cotton production requires high amounts of field pesticides to protect the crop against pests. Farmer groups and the cooperative bulk the cotton and sell it to ginners. One of the important cooperative is Lake Kenyatta Cooperative Society. The ginners that buy cotton from Lamu are Kitui, Malindi, Mezu, Mpeketoni, and Makueni ginnery.

Cashew nuts

Cashew nut is grown in both Lamu East and Lamu West. Over 60 percent of the farmers in the county have cashew nut trees on their farms on small scale. The main varieties produced are A41, A47A, A75-83, A81, and A100. The main production systems are small-scale mixed commercial, small-scale mixed subsistence, and large-scale mixed commercial. Small-scale mixed commercial farming is undertaken in areas of Witu, Hongwe, Bahari, Mkunumbi, Faza, Bodhei and Majengo in Basuba, and Mangai in Kiunga. On the other hand, small-scale mixed subsistence production is found in the areas of Hindi and Mkomani while large-scale commercial production is practised in Kiduruni of Basuba. The land under cashew nut production increased from 4,126 ha in 2011 to 7,223 ha in 2015. Yields have been fluctuating over the past five years. Production was 0.73Mt per ha in 2011 increased to 1.88 Mt per ha in 2012, but decreased to 1.08 Mt per ha in 2014. The county produced cashew nuts worth KES 412,185,000 in 2015.

Cashew nut production involves adult males and females, and the youth. Individual nursery owners who are mostly medium scale produce the seedlings. KALRO is the other key supplier of seedlings. Extension services to farmers are provided by the Department of Agriculture and by other farmers through farmer groups. The farmers use their family and casual labour for the on-farm production activities and harvesting. Suppliers of agricultural inputs play an important role of supplying chemical and other inputs. Currently, farmers do not use sufficient pesticides for cashew nut production in the county. This has sometimes compromised the quality and production levels. The main buyers of the crop are cooperatives and local traders. Small cottage processors process some.

Chicken (local)

Local chicken are reared across Lamu County. The local chicken value chain is considered pro-poor and supports youth and women. The farmers are categorized as small scale, medium scale, and large scale. The key production systems are free range, deep litter, and run system. The most popular systems are small-scale free range and medium scale run systems that are spread all over the county. The small-scale deep litter system is practiced in a small area in Hindi, bordering Manda Airport while the large-scale run system is undertaken by some farmers in Mkomani. Local chicken require little feed and inexpensive housing. It is one of the value chains that is supported by the ASDSP because of its potential to eradicate poverty amongst the poor. A survey conducted by the Lamu County Department of Livestock found that on average, a household keeps 17 chickens. There has been an increasing trend in the population of indigenous chicken, increasing from 122,243 birds in 2010 to 310,760 by 2016. With a market price of approximately KES 600 per bird, they were estimated to be worth KES 186,456,000 in 2016 and eggs production worth KES 9,000,000 most of which were for home consumption.

The county government Department of Livestock and Veterinary Services provides veterinary and extension services. The enterprise also utilises local casual labour in the on-farm production processes like feeding, hygiene and cleaning, slaughtering, and dressing. Input suppliers provide feed drugs and building material to farmers. The farmers hatch their own chicks but there are also some small-scale chick breeders. Jua Kali artisans build chicken housing for the farmers. The chicken are sold in the local markets with the main buyers being home consumers, hotels, and restaurants.

Fish

Fish is an important value chain for Lamu County and is divided into marine and inland freshwater fishing. Marine fishing accounts for 75 percent of the total fish volumes while inland fishing accounts for the remaining 25 percent. Marine fishing involves harvesting fish from the ocean and creeks/channels while inland fishing is done in inland water bodies like riverine systems, permanent or seasonal lakes and ponds. Aquaculture is practiced around Hongwe Bahari, parts of Mkunumbi, Hindi, and Mangai. Smallscale sea fishing is undertaken along the shores of the ocean. Tuna fish is caught in the deep seas while prawns are harvested in the channels. The Department of Fisheries data reveal fluctuations in the quantities of fish harvested in Lamu County in the last five years. In 2010, 2.39 million kg were harvested. The quantity declined to 2 million kg in 2012 and rose to 2.26

million kg in 2014. The revenue realised increased steadily over the same period from KES 169,134,271 in 2010 to KES 354,141,141 in 2014.

The fish value chain involves boat owners, fishermen, boat makers and repairers, input suppliers, fish dealers and mongers, the Department of Fisheries, NGOs, and the Beach Management Units (BMU). The BMU is an association of the value chain actors and stakeholders that help self-regulate the fisheries value chain. The key input suppliers are boat engine suppliers, ice suppliers, and fishing gear suppliers. Service providers include porters, net menders and port makers. The Fisheries Department and NGOs such as Northern Rangelands Trust (NRT) and World Wide Fund for Nature (WWF) provide important extension, advisory, and educative information. Fish caught is sold within Lamu, other cities in the country, and on international markets. The Fisheries Department assists by connecting the fish sellers to local and international markets. Fishmongers undertake fish retail in the local market. The fish value chain cooperatives are currently inactive or have collapsed due to mismanagement.

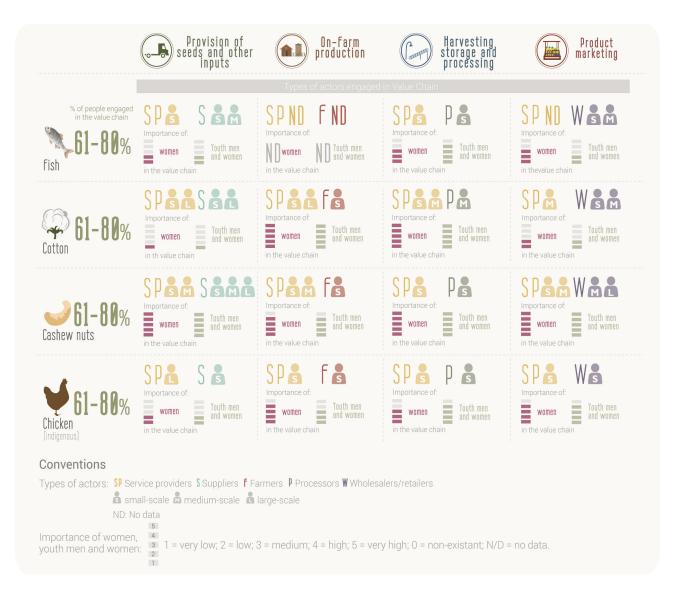
Agricultural sector challenges

The agricultural sector in Lamu suffers many challenges related to production, service provision, and market access. Dwindling and erratic rainfall results in reduced production and in some cases crop failure. It also results in scarcity of pasture and in extreme cases loss of livestock. High temperatures affect the breeding areas of fish, thus reducing quantities in the ocean. Use of irrigation in the county is very low. This is because most places in the county have saline underground water that is not suitable for irrigated agriculture. The topography of the county is also generally flat, making it difficult to use simple gravity-supported irrigation systems. The scarce rains are increasingly resulting in drying of lakes and rivers an example is Lake Kenyatta, whose water volume has decreased significantly over the years. Such reductions affect sources of irrigation water. Farm mechanisation equipment for land preparation and transport is inadequate in the county. The farmers depend on tractors mainly from neighbouring counties. Farmers in Lamu Island lack efficient means to transport their produce from the farm to the markets; they use donkeys, which are slow and inefficient. Post-harvest handling equipment for crops, livestock products, and fish is also inadequate. This results in high postharvest losses.

The availability of the grazing reserves and ranches in the county attracts livestock from neighbouring counties of Garissa and Tana River, sometimes causing resource use conflicts. This increases incidences of Foot and Mouth Disease (FMD), Lumpy skin disease (LSD), Contagious Bovine Pneumonia, Contagious Caprine Pleuropneumonia (CCPP), and Peste des Petits Ruminants (PPR). East Coast Fever (ECF) is introduced by hay infested by ticks that is imported from other counties in the Rift Valley.

Most of the fishermen are poor and depend solely on proceeds from fishing. They also lack a saving culture; thus limited financial ability to cushion them against effects of climate change. Destructive over-fishing and fishing techniques have resulted in dwindling inshore fish stocks. Regarding land tenure, only 24 percent of the farmers in Lamu have title deeds to their land. This limits the level of investment that can be done on the land. The challenges of land ownership coupled with low economic status hinder adoption of new technologies that can increase productivity and enhance market access. Financial and human resources in the agriculture sector in the county is inadequate. Currently the departments have shortages of staff. For instance, the Irrigation Department has only two irrigation officers. Moreover, compared to other Counties Lamu receives a very small allocation from the treasury. This also limits implementation of agricultural projects. Poor road infrastructure and sea transport make transportation of produce and inputs expensive. The whole of Lamu County has only 6 KM of tarmacked road. Sea transport using boats to the islands to deliver inputs and extension services as well as produce to the market is expensive. Due to the county's proximity to the Somali border, insecurity has been high. The ban on night fishing has affected fishermen directly. The insecurity has also reduced the traffic of tourists that created a big demand for local farm produce.

Agricultural value chain commodities in Lamu



Climate change-related risks and vulnerabilities

Climate change and variability: historic and future trends

Lamu County has a generally hot dry climate. Mean annual temperature are above 25°C in most of the county and mean annual rainfall averages 900mm per year for the county as a whole. The central parts of the county receive the highest rainfall totals sometime averaging over 1000mm per year while the northeastern parts receive an average of between 500 and 1000mm on average and a pocket in the south receiving lowest average annual rainfall of less than 250mm in some places. Heat stress, dry spells, and drought are hazards that strongly contribute to agricultural risk in the county. Reports have indicated that droughts in the county not only affect crop and livestock production but also other water-reliant activities such as honey production⁸ and fishing as well as wildlife⁹.

Analysis of temperature trends in the county over 25 years (1981 to 2005), showed that first season mean temperatures have increased by approximately 1°C while second season mean temperatures have increased by 0.5°C. Worryingly, analysis of average annual rainfall, measured over a 35 year period (1981-2015), showed a steeply decreasing trend in first season rainfall although second season rainfall averages have not changed significantly. The increases in temperature and reduction of first season rainfall have resulted in an increase in the number of heat stress days¹⁰ in both seasons along with an increase in drought risk¹¹.

Climate projections for the period 2021-2065, based on two representative concentration pathways (RCPs¹²), indicate that under both scenarios mean temperatures are expected to continue to increase. Of significance is that under the high emissions scenario the number of days with temperature greater than 35°C rises from less than 20 days historically in the first season to greater than 40 days and from less than 5 days in the second season to approximately 17 days. Although the increases are not as large under the low emissions scenario they are still significant. A

major impact of this continued rise in temperatures is an increase in the number of consecutive drought stress days in the first season from approximately 45 days historically to approximately 75 days under the conservative GHG emissions scenario to as much as 80 days in the high emissions scenario. The length of both seasons under the two scenarios is also expected to decrease, both scenarios indicating a reduction of greater than five days in first season length and a backward shift in the start of the second season. Total seasonal precipitation on the other hand is expected to reduce slightly in the first season (\approx 5%) and increase in the second (≈20%) under the low emissions scenario, while under the high emissions scenario the first season rainfall total remains fairly constant although second season rainfall increases by as much as 35% from the historical average. Peculiarly despite, the increases in temperature both scenarios indicate that there could also be a reduction in days with moisture stress in the county. Overall, although the projections of future climate change under the two GHG emissions scenarios show some differences. both indicate the likelihood of significant changes in the weather and climate of a county already vulnerable to drought, dry spells and heat stress.

Climate Perceptions by the farmers

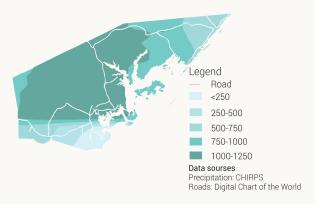
Crop production, livestock keeping, and fishing are the main agricultural activities in Lamu County. The farmers believe that climate change is as a result of interference/destruction of the environment. The county is experiencing droughts that are more prolonged and a rise in temperatures. There are delays in the onset of rainfall, the rains have decreased and become unpredictable. In 2016, the short rains never came. These weather conditions have resulted in crop failure and reduced yields. Even the yields of droughttolerant crops like cotton and cashew nuts have decreased drastically. The farmers admit that there are extended droughts that result in decreased crop production and losses. Coconut farmers reported losses of approximately 40 percent. They observed that coconut and cashew nut trees were drying, an occurrence that they had never experienced before.

Depressed rains result in scarcity of fodder, leading to malnourishment and even death of livestock. Increases

- $8 \quad http://www.nation.co.ke/counties/lamu/Lamu-drought-no-honey/3444912-3833572-rrdmxx/index.html \\$
- 9 http://www.nation.co.ke/counties/lamu/Salty-ocean-water-kill-wildlife/3444912-3826670-50ixevz/index.html/
- 10 Indicated by the number of days with a maximum temperature above 35°C.
- 11 Days with precipitation less than 1mm per day
- 12 The two RCPs, RCP2.6 and RCP8.5, are named after a possible range of radiative forcing values in the year 2100 relative to pre-industrial values (+2.6 and +8.5 W/m2, respectively). The pathways are used for climate modelling and research. They describe two possible climate futures, considered possible depending on how much greenhouse gases are emitted in the years to come. RCP 2.6 assumes that global annual GHG emissions (measured in CO2-equivalents) peak between 2010 and 2020, with emissions declining substantially thereafter. In RCP 8.5, emissions continue to rise throughout the 21st century.

Past and future impacts of climate hazards in Lamu

Historical annual mean precipitation (mm/year)

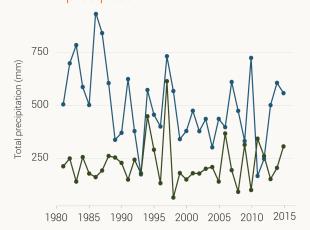


Historical annual mean temperature (°C)





Historical extreme total precipitation stress events

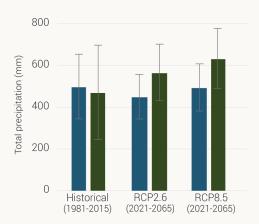


Drought hazards

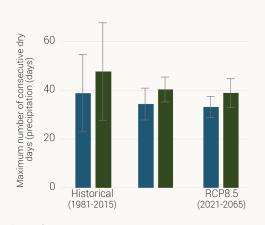
Historical drought stress events



Historical and expected extreme total precipitation stress events



Historical and expected drought stress events



January - June July - December

in livestock diseases were reported. Movement of livestock coupled with suppressed immunity because of malnourishment increase disease incidences. The most common diseases associated with drought are Foot and Mouth Disease (FMD), Lumpy Skin Disease (LSD), Contagious Bovine Pneumonia, Contagious Caprine Pleuropneumonia (CCPP) and Peste des Petits Ruminants (PPR). During droughts, hay is brought in from other counties in the Rift Valley. The hay is associated with transmission of ticks and hence East Coast fever (ECF) disease. The fishermen have realised that delays in onset of rains interfere with breeding of fish and the fishing season. Rains expected in May delay to as late as July and in addition, they end earlier than expected. This results in shortened fishing seasons. The sea has become rougher than before, which hinders deep-sea fishing and fishing technologies that use fishing lines. The hot season has become longer; this affects fishermen, especially those who fish during the day with boats that do not have shades. The farmers also reported that drought has resulted in drying of shallow wells and increased salinity in other wells.

Climate vulnerabilities across agriculture value chain commodities

The most perilous climate change hazards in Lamu are associated with depressed rains and drought. The key ones that were highlighted by stakeholders in the county are depressed rains, uncertainty in seasons (onset and duration), moisture stress, increase in temperatures, reduction in rainfall, and increase in frequency of droughts. These hazards have profound effects on different stages of the aforementioned value chains as elaborated in the following sections.

Cotton

Cotton is a drought-tolerant crop that requires minimal rains but at the right time. The most desirable species are Gossypium hirsutum, Gossypium barbadense, G. hirsutum, and G. barbadense. In Lamu, uncertainty in seasons (onset and duration) and moisture stress at the important growing stages are the most threatening hazards. Areas around Bahari, Hindi, parts of Basubu around Kiduruni, and Kiunga were more prone to the threat of uncertainty in seasons (onset and duration). Increased days with moisture stress are likely to be observed in Witu, Hongwe, Bahari, Hindi, and Amu. Uncertainty in seasons has minor effects on procurement of inputs but greatly affects cotton yields. The hazard results in less use of chemicals hence reduced costs of production. However, this poses the threat of the stockist carrying over chemicals from one season to another, which may lead to the danger of selling expired pesticides in the next season. During production, reduction in the length of the season results in poor fruiting hence reduced yields. This leads to underutilisation of storage facilities at farm and bulking level. Cotton is mainly bulked through farmer groups and cooperatives. A small number of cottage industries also uses it. Thus reduced output at farm level leads to less cotton for transportation, cottage industry and bulking. This results in underutilisation of storage and processing facilities. Effects on facilities were considered moderate.

Moisture stress moderately increases use of pesticides. Increased infestation by sucking insects necessitates increased spraying frequency, thus increasing work and costs. However, dry soils provide the best conditions for harvesting the crop. This is a minor relief to the farmers. Post-harvest handling is not affected, as the conditions are highly conducive to preparation, sorting, cleaning, and bulking cotton. However, dry conditions make the soils friable and difficult for farmers with motorcycles to ride on.

Literate farmers who are better off economically are able to address the aforementioned challenges; the most vulnerable are the poor and illiterate farmers. Literate farmers are able to discern expired chemicals, procure pesticides in case of infiltration by pests and use their own or hired vehicles to transport their cotton. The government is providing seeds and extension support. Marketing by the cooperatives and farmer groups is an important initiative that helps the farmers to cope with the situation. The farmers should be allocated enough extension staff to educate them on best agronomic practices. The training should include tillage and land preparation, timing of planting, soil fertility management, crop rotation, and pest and disease control. It is necessary to include lessons on appropriate varieties for disease resistance and other pest control strategies. Cotton production thrives under irrigation. The county should therefore invest in irrigation systems in the end to reduce challenges associated with rain fed production.

Cashew nuts

Cashew nut is a perennial crop that is grown mainly for commercial purposes. The two critical climate change hazards that influence this crop are uncertainty in seasons; early start and decreased length of growing season. Areas around Witu, Hongwe, Bahari, parts of Basuba near Kiduruni and Mangai are the most susceptible to the two hazards mentioned above. Areas around Hindi and Manda Island are more likely to be affected by uncertainty in seasons (onset and duration). Uncertainty in seasons (onset and duration)

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finds many input suppliers, service providers, and farmers unprepared. It affects mainly acquisition of seedlings that are not ready for transplanting. Agro dealers will not have stocked fertilisers, and extension services are disoriented. However, these impacts are considered moderate. Land preparation and other initial operations are also affected. Farmers are not ready for land preparation so the demand for casual labour rises sharply, increasing costs. Some farmers therefore engage family labour for land preparation. Unpreparedness results in late planting, which will affect the vigour, hence quality and quantity of yield. Increased incidences of pests and diseases also lead to increased use of pesticides, thus increasing the costs of production. The nuts harvested have compromised quality and thus difficult to market and fetch poor prices, decreasing incomes.

Decreased length of the production season does not allow all the production practices to be carried out. Seedling establishment is affected because the transplanting period is shortened; this leads to loss of seedlings in the seedbeds. Moreover, the farmer may not apply fertiliser and instead may use manure. This reduces sales by the agro-dealers, although it will reduce the costs of production at the farm.

Inadequate supply of seedlings from formal sources occasioned by reduced length of season force farmer to acquire seedlings from peers. As such, the farmers should be given adequate extension information on the right varieties and the required agronomic practices. For instance, the dwarf early-maturing variety could be recommended as the most appropriate variety since it gives high yields. The farmers should be trained on tree establishment, pest control, intercropping, and tending trees. Where production is low and of poor quality, nuts are sold directly to brokers and used for household consumption. To improve on the marketing, the farmers should be trained on harvesting, grading, and value addition so that they get better prices. They should learn how to separate the Fair Average Quality (FAQ) from the under grade (UG) nuts for better pricing. They should also be taught to process cashew apple, which fetches better prices.

Chicken (local)

Increase in temperatures and drought spells are the two main climatic hazards that pose the greatest risks to the indigenous chicken. The threat of drought affects the whole county. Increased temperatures mostly affect some parts of Witu, Mkunumbi, Hongwe, Bahari, Hindi, Manda Island, Kiduruni, and Kiunga. High temperatures have a moderate impact on procurement of feed and breeding stock, and a minor impact on housing material. Farmers incur high costs

on material to ventilate chicken housing. The shelf life of the feed is affected by high temperatures; delicate vitamins and amino acids in the feeds are destroyed when temperatures rise beyond certain levels. During times of high temperatures, farmers reduce the number of birds in the housing to allow more space per chicken. Chicken take increased amounts of water and eat less. This leads to reduced growth rates. Incidences of respiratory diseases increase, so farmers spend more on drugs and vaccines. High temperatures reduce the shelf life of vaccines. All these production-related challenges were considered to affect farmers moderately. At the post-harvest stage, high temperatures result in high mortality at collection centres and during transportation. The shelf life of slaughtered birds decreases unless cold storage facilities are used. The impact of high temperatures on marketing are rated as moderate. However, the price of meat increases due to increased handling costs. Demand for meat therefore decreases, thus reducing sales.

Drought spells result in reduced availability of feeds for the chicken. The variety and quality (due to for instance aflatoxin contamination) of feed in the market decreases. Difficulties in sourcing for chicks lead to reduced breeding stocks. Costs increase marginally due to expenditure on building materials for housing. High temperatures effect on-farm production processes. Feed becomes scarce so the birds consume less and arow slowly or lose weight. The chicken require more attention in terms of care; watering and feeding. The number of birds slaughtered decreases so market prices increase. Most farmers make their own rations at home. In this connection, farmers should be trained on how to make own chicken rations using available materials, with emphasis on protein content. However, most homemade rations do not have adequate protein levels. The Department of Livestock is involved in capacity building for the farmers on good husbandry practices and feeding. Farmers do not pay much attention to treatment and vaccination of their chicken. They usually depend on indigenous technologies for treating chicken. The farmers need support on techniques that increase productivity through breeding, and on disease control. Some of the key breeding interventions that should be promoted are synchronised hatching, artificial incubation, chick management, and discouraging inbreeding. For disease control, assistance is needed on vaccination and isolation, improved sanitation, and strategic worm control. Farmers use collective action in marketing their chicken to access good markets. Poultry vending cages have been constructed in markets to reduce mortalities during marketing. ASDSP is funding the indigenous chicken value chain.

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Fish

Increases in temperatures and reduced rainfall are the most critical climatic change hazards that threaten the fish value chain. Shores and channels are more likely to be affected when temperatures increase while deep-sea fishing is more susceptible to decreases in rainfall. Increased temperature has a moderate effect on the processing of fish but severe consequences on postharvest management and marketing. The input supply stage of the fish value chain involves purchase of fishing boats, boat engines, and fishing gear. High temperatures are associated with clear skies; fish in water are therefore able to see more clearly, so it becomes more difficult to catch those using hooks and fishing lines. The numbers of fish caught therefore decreases. Post harvest activities include on-board harvesting of the catch; this involves gutting, bleeding, and head cutting. The other activity is on-board and offshore chilling and transportation. All these processes require a cold chain since they rely on frozen ice. This stage is severely affected by increasing temperatures as they increase fish spoilage. The high temperatures also cause the ice to melt faster.

Since Lamu is remote from the markets in Mombasa and other counties, significant resources are invested in cold chains to get the fish to the market. This increases the unit price and hence the fish becomes less competitive compared to fish harvested in Mombasa and nearer fishing grounds. Therefore, in many instances the fishermen take low prices to sell the fish before it spoils.

Reduced rainfall does not affect acquisition of inputs in the fish value chain. It however has a major impact on prawns that inhabit brackish waters. This is where the fresh water mixes with the ocean saline waters. Reduced rainwaters reduce the river flows; hence, the amount of fresh water mixing with saline water and thus affecting the habitat for prawns. Reduced rainfall implies extended dry spells, associated with increased temperatures. This affects post-harvest processes as ice melts, making it difficult to keep the fish fresh between the fishing grounds and the landing grounds. More ice is used during transportation, thus increasing prices. The county government has established a revolving fund to support purchase of bigger boats, bigger engines, and modern fishing gear to allow deep-sea fishing. The county government, Beach management unit (BMU), Northern Rangeland Trust (NRT) and World Wide Fund for Nature (WWF) are building capacity of the fish value chain stakeholders on sustainable fishing techniques. In collaboration with BMUs, the county government BMUs is establishing a marketing infrastructure, including ice making plants and cold storage facilities. The farmers and fishermen in Lamu County are small scale and resource constrained, so the effects of the above hazards affect them more.

Adaptation to climate change and variability

On-farm adaptation practices

The Lamu County agricultural sector has experienced the impacts of climate change, the most prominent being extended droughts and delayed and depressed rains. This has led farmers and institutions to adopt adaptation strategies that counter the adverse effects of climate change. Majority of farmers in Lamu are smallholder and of low economic status. This makes them more vulnerable to the effects of climate change. The farmers are resorting to selection of crop varieties and types that are drought tolerant and early maturing. These crops include the maize varieties bred for the coastal climate, cotton, simsim, cashew nuts, and coconuts. They also keep livestock that can survive extended periods of drought with minimal feeding such as goats and indigenous chicken. Chicken have become very popular, especially the Kuchi chicken breed that fetches very attractive prices (over KES. 2000, approximately USD20 per bird). The county government Department of Agriculture, Livestock, and Fisheries is playing a key role in ensuring that farmers get seeds and information on these appropriate varieties. The county government distributes seeds for some of the aforementioned crops at the start of the season. Other key institutions supporting these initiatives are KALRO, NDMA and NGOs. These adaptation measures need to be improved by the county government by providing more resources for extension.

Use of irrigation in the county is limited to areas found around Mpeketoni and Tana Delta (Witu) are the main users. Irrigated farms grow mainly vegetables though cashew nut farmers apply some drip irrigation on their crops. The farmers also use water from shallow wells. The Department of Agriculture and Irrigation is supporting these efforts. For example, the department establishment the Jubilee Youth Group Irrigation Project in Mpeketoni. The biggest challenge hindering up-scaling of these irrigation initiatives is that most parts of the county have saline underground water that is not suitable for irrigation. Important water bodies like Lake Kenyatta that would have provided water for irrigation have dried up. Lamu County is generally flat, with the highest point being only 50 m a.s.l. This makes it difficult to use gravity irrigation. Dry spells

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result in scarcity of fodder for livestock; some farmers resort to harvesting of grass in the forest. This however favours only those farmers who have vehicles or can afford to hire them. Pastoralists migrate with their cows to areas near Boni Forest where there is pasture. They also keep maize stalks and other crop residues to feed their animals during times of scarcity.

Climate change has resulted in destruction of fish breeding areas near the shores. Fishermen have to sail deeper in the sea to be able to capture greater amounts of fish. To counter this challenge, the fishermen are now resorting to deep-sea fishing, which requires bigger boats with engines that are more powerful. The fishermen are limited by lack of modern technologies like use of Global Positioning Systems (GPS) to map fishing grounds in the deep sea, use of fish finders and on-board processing abilities. To regenerate inshore fishing, the county government and Alkher Foundation are trying to establish cage fish farming in Matondoni. Investments should be made in developing cold storage facilities to help reduce post harvest losses. Additionally, efforts should be directed towards value addition by development of cottage industries and promotion of direct fish marketing to reduce length of the value chain.

There is over reliance on crop, livestock, and fish farming. To diversify farming, initiatives are under way to introduce apiculture as an alternative engagement that is less susceptible to drought and requires less capital and other resources to start. High temperatures pose great challenges on the quality of products in the value chains like poultry and fish. These value chains require investments in cold chain infrastructure. Small-scale farmers and fishermen experience high losses and sell their produce at low prices because they cannot store it for long periods. Supply of ice in Lamu County is limited as most of it is sourced from Mombasa; only limited amounts are made available, which makes it expensive. There are plans to bring investors in ice production to Lamu County. These value chains also suffer because there is very little collective action amongst the actors. Thus, there is need to establish cooperatives or organisations that the farmers and fishermen can use as avenues to procure inputs, invest in infrastructure, and source for lucrative markets.

The priority value chains in Lamu (Cotton, cashew nut, indigenous chicken and fish) could be improved by using appropriate technologies and good management practices. To improve productivity, the farmers should be trained and assisted to adopt varieties that are tolerant to drought, give high yields and are appropriate for the market. The dwarf cashew nut tree should be promoted because it is early maturing and high yielding.

The Kuchi chicken should be promoted because of the high value of the chickens and their eggs. The farmers should be encouraged to practice good animal husbandry and proper agronomic practices for crops. Good agronomic practices in cashew nut production should be applied during land preparation, tree establishment, and weeding. For cotton, it would entail proper timing of planting, manure application, and intercropping. The farmers also need to understand pest and disease management strategies that are effective and environmentally friendly. Crop rotation, using clean seeds, use of natural predators for the pests, selection of varieties that are pest resistant, and use of chemicals are some of the key integrated pest management practices that can be deployed.

For chicken, the farmers need to be enlightened on good husbandry practices and balanced feeding to ensure the chicken are well nourished to increase productivity. In addition, they need to understand breeding strategies that will go hand-in-hand with good feeding. Key breeding practices that can increase productivity are synchronised hatching, artificial incubation, good chick management, and avoidance of in breeding.

Off-farm adaptation practices

Besides the on-farm interventions, other initiatives are being undertaken to manage the effects of climate change. The NDMA in Lamu conducts monthly field monitoring to gather drought early warning data. The monitoring gathers information on both biophysical (rainfall, VCI- data is provided by Boko University) and socio-economic indicators (livestock body condition, milk production & consumption, pasture & browse condition, grazing distances, distances to water sources, prices of cattle and goats, maize and beans, migration, coping strategies by the HHs, nutrition status of children <5yrs, income sources, food consumption score and any emerging issues. This information helps to design strategies to tackle foreseen climate change challenges. The NDMA also collaborates with the different relevant departments of the county government to disseminate information and help in implementing the designed plans. It also works with the communities in the affected areas to develop the community-managed disaster risk reduction (CMDRR) plans. These are long-term initiatives that allow the communities to come up with projects or endeavors that will cushion them against effects of climate change in the long-term and help mainstream them in local planning. As a member of the CSG, KMD works in collaboration with NDMA in giving weather outlook KMD and ASDSP also work to gather and disseminate information through the

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PSP programme. The participatory scenario planning (PSP) is an instrumental approach but it has not yet worked in Lamu County.

Due to scarcity of water during periods of extended droughts, much effort is made to harvest water in the county. This is done through construction of water pans (Jabias). The areas that use this form of water harvesting are mainly Koreni, Kiunga, Mkunumbi, Dide-Waride, and Chalaluma. This is a very useful initiative because many parts of the county apart from Lamu Island have saline underground water, which is not appropriate for farming, livestock and household use. However, with extended droughts, the waters collected in the water pans are exhausted. Other ways to manage effects of climate change include diversification of income-generating activities. Household members take up casual work as off-farm labourers for example in quarries to earn income.

With insufficient rains, conservation farming should be adopted. However, farmers lack the necessary knowledge and tools to implement the practice. Currently extension services from the county government are limited. Farmer-to-farmer extension approaches are used, where farmers share information amongst themselves informally or through farmer groups. The county government Department of Agriculture and Livestock through extension services and NGOs are training farmers to adopt conservation farming techniques. For cotton production, they advise farmers on early land preparation and planting to take advantage of short rains. Northern Rangeland Trust (NRT) is working with livestock farmers to promote sustainable pastoral practices. Some of the initiatives they have are development of grazing plans, rehabilitation of areas with invasive plant species and building management structures for grazing areas. Despite all the efforts, information on weather and timing of agricultural activities is not accurate and timely, and does not reach the farmers in many cases. Additionally, financial and human resources limit the Department of Agriculture and Livestock: the staff cannot therefore effectively reach the farmers.

The Department of Fisheries, WWF, and the NRT are also involved in promoting sustainable fishing and rehabilitation and protection of fish breeding areas. They are involved in capacity building of fishermen and other stakeholders in the fish value chain. They strengthen the fisheries value chain management through supporting the Beach Management Units. They also discourage unsustainable fishing systems for instance beach seine fishing and encourage deepsea fishing. NRT uses a market-oriented approach to

encourage fishermen to venture into deep-sea fishing and use modern fishing technologies like hook and line.

For the priority value chains in this county to flourish, the county government should play a more active role in supporting them. The farmers need extra support in trainings and thus the county government should plan and invest in extension services. This is to equip the farmers with knowledge on the new technologies and management practices. Some of the key technologies packaged and disseminated are selection of appropriate breeds and crop varieties, management strategies for animal diseases, plant diseases and pests, conservation farming techniques, direct market opportunities, and investment in post-harvest handling infrastructure to reduce losses and enhance value addition.

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Adapting agriculture to changes and variabilities in climate: strategies across major value chain commodities

fish	Provision of seeds and other inputs	On-Farm production	Harvesting storage and processing	Product marketing	
Increasing temperatures	N/A	Reduced activity by fishermen. Reduced volume of the catch as fish move to deeper waters; slow sexual activity among the fish; low cloud cover aids fish visibility and reduces catch	Increased spoilage of fish. More ice required to maintain cold chain. Reduction of fish value and quality. High post-harvest losses	Lower prices. Less supply to outlets	
Magnitude of impact		Moderate	Severe	Major	
Farmers' current strategies to cope with the risks	N/A	Early morning fishing. Use of smaller net mesh sizes (catch smaller fish). Fishing in breeding zones. Moving further and further from the coast/shore to find fish	Sell quickly. Lower prices. Home consumption. Procurement of more ice. Drying of fish (using fire and sun) for preservation	Drying of fish and transporting them leads to loss of value; awareness creation and promotion of fish eating culture; procurement of cold chain; selling at the local market; sell to traders from other region	
Other potential options to increase farmers' adaptive capacity	N/A	Promotion of motorized boats with cool boxes/ice packs for offshore fishing. Enforcement of standardized fishing net size. Train fishers on modern fishing and fish handling techniques. Awareness creation on effects of climate change on fisheries and suggested adaptation measures	Development of cold storage facilities for fish. Purchase of ice making plants. Construction of modern fish processing plants. Train fishers on value addition and invest in fish processing plants	Establishment of fish marketing centres. Improvement of market information systems. Exploration of both local and international (export) markets	
Reduction in rainfall	Low acquisition of fishing gear hence supplier sales fall. Resources re-directed to emergency and recovery. Fish microcredit reduced	Reduction in brackish water required for prawn production. Reduced catch since fish migrate to deep water. Fishing in breeding sites leads to overfishing; Increase in illegal fishing activities. More time spent looking for fishing sites	Fewer fish available for processing and sales	Fewer fish available for sales. Lower supply to stores and marketing centres. Demand greater than supply	
Magnitude of impact	Moderate	Major	Minor	Minor	
Farmers' current strategies to cope with the risks	Informal borrowing of funds to procure fishing equipment (revolving fund mechanisms)	Fishing at night or during cool hours of the day. Fishing in breeding zones (unknowingly). Use of nonstandard nets (small mesh size). Use of GPS to identify good fishing zones	Home consumption of small fish. Basic preservation using water and ice buckets. Drying of fish (using fire and sun) for preservation	Informal marketing of fish. Minimal transport and sales to big markets	
Other potential options to increase farmers' adaptive capacity	Ensure formal finance from microfinance institutes is available for fishing inputs	Use of motorized boats, with cold storage facilities and modern gear. Breeding site protection. Awareness creation on effects of climate change on fisheries and suggested adaptation measures. Promotion of modern cage culture for prawns	Construction of modern fish processing plants. Train fishers on value addition and invest in fish processing plants	Development of local fish marketing centres. Revamping/ capacity building of fish cooperatives. Exploration of both local and international (export) markets	

Cotton	Provision of inputs	On-farm production	Harvesting storage and processing	Product marketing
Changes in seasons (onset and duration)	Reduced sale of agrochemicals. Incidences of stockists selling expired chemicals to farmers	Reduced cotton boll size and reduced lint yield. Delayed land preparation	Reduced quantity and quality of harvest. Reduced bulking and underutilisation of storage infrastructure. Less volume available for processing (both for informal and formal processers).	Unfulfilled contracts. Less volume for sales. Shortage of raw cotton for processors
Magnitude of impact		Moderate	Moderate	Moderate
Farmers' current strategies to cope with the risks	Use of expired chemicals. Sourcing of seeds and inputs by word of mouth	Reduce farm labour requirements. Intercropping with other crops	Reduce harvest labour requirements. Use of storage facilities for other purposes or crops	Import of raw cotton from neighbouring counties. Use of small vehicles for transport of raw cotton. Sales of raw cotton to neighbouring counties for further processing
Other potential options to increase farmers' adaptive capacity	Train farmers on local seed production and storage. Capacity build farmers/stockists on safe usage and stocking of chemicals. Development of early maturing, drought and disease resistant cotton varieties	Promote on-farm diversification. Promote irrigated cotton production	Creation of local certified warehouse receipt systems. Establishment of large cotton industries. Development of industrial park for cotton processing	Linkage of farmers/ cooperatives with intermediate/ domestic markets. Contract cotton growing
Drought / Moisture stress	Limited seed availability	Increased pests and diseases	Conditions for cotton harvest improve, however boll size and lint quality may be less due to water stress during the growing season. Storage and processing is also largely unaffected	High demand and high prices. Ease of sales to markets. Shortage of raw cotton for local processors
Magnitude of impact	Moderate	Moderate	Minor	Minor
Farmers' current strategies to cope with the risks	Sourcing of seeds and inputs by word of mouth. Reduce purchase and use of inputs and agrochemicals	Increased application of pesticides. Crop rotation to reduce pest and disease incidence	N/A	Sales of raw cotton to processors outside of the county
Other potential options to increase farmers' adaptive capacity	Support (microfinance and knowledge) agro-dealers to stock a variety of seeds and inputs. Seed cotton production contracts	Water harvesting and small-scale irrigation. Improved agro climatic advisory services. Train farmers on integrated pest and disease management	Creation of local certified warehouse receipt systems. Establishment of local cotton processing industries. Development of industrial park for cotton processing	Establish contract growing and marketing agreements. Improve feeder road infrastructure for transportation of raw cotton

Poultry	Provision of seeds and other inputs	On-Farm production	Harvesting storage and processing	Product marketing
Increasing temperatures	Poor health of chicks and increased mortality. Reduced feed availability and shelf life	Reduced feed consumption resulting in slower growth and delayed maturity. Increased costs for construction of temperature regulating enclosures with mesh and makuti. Increased water requirements Increased management requirements and incidence of respiratory disease	High costs associated with cold storage requirements. Increase in perishability of meat and eggs. Low quality and smaller chickens and eggs harvested. Increased mortality at collection centres	Increased transportation costs (fewer birds can be transported at once). Increased prices due to increased management costs
Magnitude of impact	Moderate	Moderate	Moderate	Moderate
Farmers' current strategies to cope with the risks	Farmer-to-farmer sharing of information on health management. Use of local ingredients to supplement feed	Reduced stocking density to minimise heat stress from overcrowding. Improved (ventilated chicken housing). Watering of chicken enclosure to reduce temperatures. Use of indigenous knowledge for health management of chickens	Slaughter at household level. Formation of small poultry groups	Local household consumption. Transport using small cages with few birds. Sales at local poultry sales yards
Other potential options to increase farmers' adaptive capacity	Training on production and conservation of homemade feeds. Promote feed milling using locally available materials	Train farmers on construction of improved (ventilated and temperature regulating) enclosures	Establishment of processing facilities for value addition. Capacity building of poultry groups on packaging and value addition. Establish cold storage facilities at trade centres	Capacity building of poultry groups on marketing. Procurement of specialised poultry transport vehicles. Establish contract chicken farming. Increase number of shaded poultry sales yards
Droughts / Moisture stress	High mortality rate of chicks. Feed shortages and increase in prices of inputs. Quality of available feed is reduced	Increased need and costs for veterinary care. Increased costs related to provision of feed, water and housing. Reduced feed intake by chickens. Reduced productivity and profitability	Reduced quantity and quality of eggs harvested. Reduced number of chickens slaughtered due to low production. Increased cold storage requirements and costs. Increased collection and transportation costs	Reduced household income from chicken and egg sales. Lower prices for farmers, higher prices for consumers (increased profits for middlemen and traders).
Magnitude of impact	Moderate	Major	Major	Moderate
Farmers' current strategies to cope with the risks	Farmer-to-farmer sharing of information on drought and health management. Use of local ingredients to supplement feed	Reduction of the flock. On-farm rationing of feed. Diversification to other enterprises	Formation of small poultry groups. Slaughter at household level	Local household consumption. Transport using small cages with few birds. Sales at local poultry sales yards
Other potential options to increase farmers' adaptive capacity	Training on production and conservation of homemade feeds. Promote feed milling using locally available materials (including support to procure equipment)	Training farmers on affordable and modern (ventilated) enclosure construction. Capacity building on improved health management	Establishment of processing facilities for value addition. Capacity building of poultry groups on packaging and value addition. Establish cold storage facilities at trade centres	Use of specialised poultry transport vehicles. Contract chicken farming. Increase number of poultry sales yards. Establish chicken sales/ marketing days

Cashew	Provision of seeds and other inputs	On-Farm production	Harvesting storage and processing	Product marketing
Changes in seasons (onset and duration)	Unavailability of seedlings that are ready for planting. Disruption in planting activities	Delays in land preparation. Delayed planting. Increased weeds, pests and diseases. Higher labour costs over a longer period	Low quality and quantity of produce. Low household incomes. Underutilized processing capacities. Loss of produce in the field	Low volumes for marketing. Missing market timing. Difficulty in meeting quantity, quality and timing requirements of buyers
Magnitude of impact	Moderate	Major	Major	Major
Farmers' current strategies to cope with the risks	Sourcing seed from neighbouring farmers. Procurement of seedlings from research centres (KALRO Mtapwa). Planting without fertilizer application. Farmer-to-farmer information sharing on seasons and climate	Diversification to other activities. Early land preparation using family labour. Low cost drip irrigation used by some	Limited storage. Limited value addition. Household consumption. Roasting for local sales and consumption	Farm gate sales. Sales at local markets. Sales to middlemen. Household consumption
Other potential options to increase farmers' adaptive capacity	Establishment of local commercial seedling nurseries. Training on grafting and seedling propagation. Bulk/ group procurement and storage of seedlings, fertilizer and other inputs. Establishment of digital climate information sharing facilities	Promotion of conservation agriculture. Support for mechanised tilling services. Enhance water harvesting and scale irrigation development. Capacity building on use of organic manure and compost. Training on orchard management	Bulking of farm produce through cooperatives. Capacity building on value addition, packaging and marketing. Establishment of bulk storage and processing facilities	Promote contract farming. Formation / capacity building of producer and marketing groups. Improve market information availability
Droughts / Moisture stress	Loss of seedlings in nurseries and in the field. Reduced purchase and application of fertilizer and manure	Extra labour (and costs) for land preparation. Wilting of plants. Drastically reduced productivity	Reduced volumes and quality of harvest. Low prices. Default on loans. Underutilized storage and processing capacities. Loss of produce in the field	Low supply to market. Reduced income for farmers and traders
Magnitude of impact	Major	Major	Major	Major
Farmers' current strategies to cope with the risks	Neglect of old plants. Farmer-to-farmer information sharing on seedling management and availability of inputs	Reduced spraying and fertiliser application. Low cost drip irrigation used by some. Planting without fertilizer application	Limited storage. Limited value addition. Household consumption. Roasting for local sales and consumption	Farm gate sales. Sales at local markets. Sales to middlemen. Household consumption. Reduction of prices to enhance sales
Other potential options to increase farmers' adaptive capacity	Enhanced agrometeorological information using ICT. Introducing high yielding and drought resistant varieties	Water harvesting and small-scale irrigation development. Establishment and training on use of compost. Scaling up of conservation agriculture. Rehabilitation of old orchards. Training on use of IPM	Bulking of farm produce through cooperatives. Capacity building on value addition, packaging and marketing. Establishment of bulk storage and processing facilities	Promote contract farming. Formation / capacity building of producer and marketing groups. Certification system with relevant body to enhance sales

Policies and Programmes

The county implements policies and programmes aimed at reducing the impacts of weather variability and climate change. NDMA plays a pivotal role in climate change adaptation programmes. It provides early warning information that is shared with all the relevant county departments and stakeholders. They also coordinate the articulation of the contingency plans that address drought emergencies and the Community Managed Disaster Risks Reduction plans (CMDRR). The county government plays an important role in implementing some of the policies and programmes through its departments: Agriculture and Irrigation, Livestock, Fisheries, and Cooperative Development, and Natural Resources Management. These efforts are also in line with the national policies that promote good nutrition, availability of food to the people, and protection of vulnerable populations. Despite the county government being part of the steering group and working in collaboration with NDMA, it needs to plan and budget for interventions that will guarantee food production as well as contingencies during drought disasters.

The Department of Agriculture and Irrigation has adopted the National Irrigation Policy of 2015 that promotes expansion of irrigation, water harvesting, and creating the framework to guide development of irrigation projects. The department has established irrigation projects in Mpeketoni, Chalaluma delta, MOA, Kitumbuni (Witu), Uziwa (MUUM), Maleli, and Nyati. The projects are geared towards increasing production under irrigation. Unfortunately, irrigation is constrained by the saline ground water, drying up of Lake Kenyatta, and generally flat topography that impedes the gravity irrigation system

A number of projects support the livestock sector in the county; this is in line with the National Livestock Policy of 2008. The policy intends to develop the livestock sector in the areas of breeding, nutrition and feeding, disease control, value addition and marketing, and research and extension. The county government provides vaccinations against diseases associated with movement of livestock especially in the dry seasons. The NRT through its range management project is working with pastoralists to ensure sustainable use of the rangelands. The county is also a beneficiary of the five-year Regional Pastoralists Resilience project initiated in 2014 and funded by the World Bank. The project works to improve exploitation of natural resources, access to markets, livelihood support, and risk management. It is implemented in collaboration with the Department of Livestock Development.

The Department of Fisheries Development, NRT, and WWF have initiatives that promote sustainable extraction of the ocean resources i.e. fish and Mangrove. They focus on capacity building of stakeholders on the importance

of sustainable fishing and mangrove logging. They also contribute towards strengthening the capacity of the BMUs, which are self-regulating institutions of the fish value chain. WWF and NRT also work with the KWS to ensure conservation of marine parks and fish breeding grounds. NRT is responsible for conservations of following ecosystems; Awer, registered in 2013 mainly focuses on wildlife, Pate that is focuses on a marine ecosystem registered in 2012 and Hanshak-Nyongoro registered in 2012 and concerned with promoting peace and resource conservation.

NRT also helps in market linkages for fish captured in the deep sea; this encourages fishermen to venture into the deep sea. The Department of Lands and Natural Resources has a project for tree planting in Kiunga, Lamu, and Hongwe. The project is intended to increase the tree cover in the county.

Governance, institutional resources, and capacity

The NDMA is a government agency whose mandate is to design strategies that will prevent drought emergencies and mitigate the effects of climate change. It is an important and instrumental institution in coordinating and implementing initiatives related to reducing the impacts of weather variability and climate change. It works in collaboration with all the government agencies, the national government, and the county government. Their initiatives are for emergency and for creating long-term resilience. NDMA involves the county government departments and other agencies such as NEMA, KRCS, WV KFS, and KWS in planning through the county steering group that is co-chaired by the County Commissioner and the Governor. They conduct bi annual food security assessments, rapid assessments, generate and share early drought warning information. They have contingency plans as well as community-managed disaster risk reduction plans (CMDRR). The contingency funds are used for drought emergencies while the CMDRR is to create long-term strategies that are embedded in local plans. The drought contingency interventions funded through the National Drought Contingency Fund with support from the EU financed through Kenya Rural Development Programme (KRDP) During the 2016/2017 drought, NDMA provided food items for fees, concentrates for livestock, slaughter destocking, and commercial offtakes, provision of aqua tabs, provision of fuel subsidy to desalinating plants, livestock vaccination and tsetse control, water trucking and provision of plastic water tanks to communities and institutions' peace meetings

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Annex FR4

The county government through the Departments of Agriculture and Irrigation, Livestock, Fisheries, and Cooperatives, and Natural Resources Management have programmes that intend to help communities cope with the effects of climate change. These departments do not have plans that are focused on climate change issues but some of the activities are related to climate change. The departments' plans are based on the five-year CIDP of Lamu but each prepares their plans independently. The departments are faced with challenges of inadequate financial and human resources that limit their efforts. The county government has also not mainstreamed climate change in its planning and budgeting. Nevertheless, the departments have knowledgeable and competent staff in technical and policy-related issues. The staff are also used by other NGOs such as WWF, NRT, and NDMA to help in implementation of projects.

World Wide Fund for Nature (WWF) is an international NGO that focuses on environmental conservation. It has a programme called Coastal Kenya Program that covers the Kenya coastal counties, Lamu being one of them. They focus on marine and terrestrial conservation. In marine conservation, they concentrate on protection of species and conservation fishing. On terrestrial conservation, they are working on conserving the Boni-dodori Forest. They also support livelihoods and capacity building initiatives. Their plans and programmes are based on broad global objectives and cascaded down to the country and regional goals. They work with the County Department of Fisheries, Lands, and Natural Resources and KWS in planning and implementing their projects.

The Northern Rangeland Trust (NRT) is a communityled non-governmental organisation working in northern Kenya and the coast; its membership includes local leaders, politicians, and conservation interests. Their main donors are The United States Agency for International Development (USAID), The Nature Conservancy, Danish International Development Agency (DANIDA), and Agence Française de Development (AFD). The NRT works with communities to implement sustainable natural resource management plans, monitor fishing, and build their capacity for effective governance. Their interventions are in the areas of marine and terrestrial ecosystems. They promote marine conservation in Pate and Kiunga, Boni Forest in Awe, and Livestock Rangelands in Hanshook-Nyongoro. They engage in both project implementation and research. They support the BMUs and other community-based organisations that manage natural resources. NRT works very closely with the county government

other government agencies like KWS and KFS. Lamu County is a key contact point by government, NGOs, and other organisations that want to work with stakeholders in the fishing industry. They are an avenue to promote new technologies, laws, policies and regulations, trainings and capacity building. Their source of funding is registration and renewal fees, some monies from county government, and charges of boats and fish caught. Organisations such as NRT and WWF support some of the BMUs initiatives and activities. Insecurity is a major problem that affects all the institutions and programmes working in Lamu.

Synthesis and Outlook

Climate change affects the agricultural sector in Lamu County considerably. The county is threatened by uncertainty in seasons (onset and duration), moisture stress, increase in temperatures, reduction in rainfall, and drought. All these have far-reaching effects on crop production, livestock rearing, and fishing, key activities of the agricultural sector of Lamu. The national government, county government, government agencies, and NGOs have initiatives to manage the consequences that result from these harsh climatic conditions. The county government is investing in irrigation projects to increase production. They are also offering extension services to farmers and disseminating new technologies. In addition, there is the government seed distribution programme to ensure farmers have appropriate seeds at planting time. They also advise the farmers on the appropriate crops to grow given the prevailing conditions. Part of the extension has provided farmers with knowledge on good agricultural practices like early land preparation and planting; the knowledge goes a long way in managing water from depressed rains. The communities are also being involved in water harvesting using water pans (Jabias).

Livestock farmers use crop residues to feed their livestock during periods of scarce fodder; those with means harvest grass in the forest to feed their animals. Pastoralists move to areas near the forests to graze their livestock. The Livestock Department and NDMA have been encouraging farmers to keep small livestock like goats and chicken that can withstand scarcity of feed. For the fishing value chain, the fishermen are being given incentives to venture into deep-sea fishing to reduce pressure on on-shore fishing. The county government revolving fund helps the fishermen to procure bigger boats that can venture far into the ocean. There is a number of initiatives by the county government departments; NGOs,

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and other government agencies to train crop and livestock farmers as well as fishermen on sustainable resource use. The NDMA plays an important role in coordinating climate change initiatives, providing early warning information over and above their drought contingency interventions and building community resilience and preparedness. The communities are also taking up alternative activities like apiculture and off-farm activities like casual labour.

The efforts to develop climate change risk strategies is a combined and complementary initiative of the NGOs, the government, and government agencies. NDMA plays an important and instrumental role in coordinating as well as implementing climate change adaptation and mitigation measures. In Lamu, WWF and NRT are involved in the pursuit of sustainable and conservative use and management of natural

resources. The county government plays a pivotal role of providing technical expertise and knowledge that is harnessed by the different stakeholders to implement their development initiatives.

Despite these efforts, it is evident that climate change has not been mainstreamed in the county government's planning and budgeting. Moreover, the different county government departments do not undertake coordinated planning for their activities. This results in duplication of roles and loss of synergy. Besides WWF and NRT, the rest of the players are not involved in research. In spite of the important roles played by the NGOs in managing climate change, their mandate is limited and many times guided by their main objectives; accordingly, their roles might not be flexible.

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Annex FR5

Ministry of Transport, Environmental and Social Impact Assessment Study Report or

Construction of The First Three Berths of The Proposed Lamu Port and Associated Infrastructure,

2013 (Extracts)

REPUBLIC OF KENYA



MINISTRY OF TRANSPORT

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY REPORT FOR CONSTRUCTION OF THE FIRST THREE BERTHS OF THE PROPOSED LAMU PORT AND ASSOCIATED INFRASTRUCTURE

FINAL REPORT

FEBRUARY, 2013

PROPONENT

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PREFACE

This report has been prepared by the consultants to enable the Ministry of Transport pursue an Environmental Impact Assessment license from the National Environmental Management Authority (NEMA) prior to construction of the proposed first three berths of the proposed Lamu Port and associated infrastructure.

Feasibility study carried out by the Japan Port Consultants Ltd in 2010 spelled out that Lamu port development will have extensive irreversible environmental, social, and cultural impacts on on what is a unique and culturally sensitive area. This therefore justified the need for an ESIA study in order to provide for sufficient investigation and participation of a wider section of stakeholders so as to determine mitigation measure aimed at minimizing negative impacts and maximizing on the positive impacts.

EXECUTIVE SUMMARY

The Government of Kenya (GOK) through the Ministry of Transport plans to build a port at Manda Bay in Lamu. The port development is considered a flagship project in the country's Vision 2030 Strategy of Growth and Development which is expected to accelerate development of trade routes and in the regions traversed by the new transport corridor, in particular the Northern part of Kenya which is still under-developed. The current project aims to undertake the construction of the first three (3) berths and associated infrastructure of the proposed Lamu Port. Project activities would include dredging, reclamation and construction of an access road.

Implementation of the port development project is expected to raise a number of environmental and social concerns that are both negative and positive to the surrounding environment and local communities. The Ministry of Transport commissioned this Environmental and Social Impact Assessment (ESIA) study to determine the likely impacts of the proposed development on the environment and local communities and advise on mitigation measures that need to be undertaken to address adverse negative impacts.

Lamu being largely a "virgin" marine ecosystem presents a diverse floral and faunal make-up. The **major impacts** likely to occur as a result of the construction of the first three berths are summarized as follows:

(1) Water Quality

The ESIA study has established that at the construction stage there would be significant impact on water quality likely to arise from dredging and dumping of dredged material. These impacts include sedimentation as a result of clearing of land for construction of the berths and the proposed causeway; impacts on aquatic biota as a result of decline in water quality, decline in fish population as a result of turbidity arising from construction activities and potential impact on tourism and leisure activities should turbidity extend to beach areas. During the operations stage there would be a threat to the environment in terms of potential of oil spill from ships

Mitigation measures proposed include use of less intrusive dredging techniques during the construction phase and development and implementation of an effective oil spill preparedness and response plan at the operations phase.

Lamu being an undeveloped area has a natural state of the environment due to lack of industrial and residential activities that can introduce harmful pollutants into the area. Water samples taken during baseline survey in the area indicated lack of harmful substances within Manda Bay. The long term challenge of port development and operation will be to control the introduction of contaminants from port activities and hinterland effluent, particularly from the industrial zones. In the event that offshore dumping is required and done inappropriately, impacts on the marine ecosystem can be adverse. For the construction of the first three berths, no offshore dumping is anticipated as all the dredged material will be used for reclamation of the area prposed for the causeway and berth structures.

(2) Impacts on Mangroves

In phase one of the project, two hectares of mangroves will be cleared to pave way for the construction of the causeway and access road. Also some mangrove areas may experience altered tidal flushing as a result of the construction of the proposed infrastructure. Mangrove forests will also be at risk from direct human impacts. With the influx of population, the risk of Mangroves being felled for commercial and personal use will increase. Port development should go hand-in hand with conservation efforts to protect mangrove forests. The risk of pollution will similarly increase with the development of the hinterland.

- To mitigate against direct impacts, there is need to confine areas of direct loss to the proposed infrastructure corridor footprint. Also, there is need to carry out mangrove restoration in sites adjacent to the project site. A minimum are equivalent to that cleared is recommended, however restoration of areas larger than the cleared site on regular/ continual basis is highly recommended.
- Management of altered tidal flushing can be done by incorporation of mitigation measures into the engineering designs (e.g. incorporation of as many culverts as possible) to maintain tidal flushing
- Monitoring program need to be put in place that will assist in the management of potential impacts. This should consist of; mangrove mapping, mangrove health surveys, monitoring of any sediment accumulation and assessments of the potential changes in soil salinity in the vicinity of the project area
- Contingency measures to be put in place in the unlikely event that the identified direct and indirect impacts of port activities exceed the approved limit, this may involve all clearing activities being temporarily stopped until the outcomes of an investigation into the non approved clearing have been concluded and options for rehabilitation investigated.

(3) Impacts on Fisheries

A large number of population in the district are dependent on fishing as means of livelihood. The proposed port development will encroach on fishing grounds thereby displacing the artisanal fishermen from some of their traditional fishing grounds and landing sites. With the development accessibility to fishing grounds will be restricted and some landing sites lost. Even though the area where the port is proposed to be constructed is not a major fish spawning ground, factors that affect water quality cumulatively may reduce fish stock in the area. Sea routes used by fishers, especially Mkanda (main channel) will be affected by dredging. Fishers using small vessels will have difficulty travelling between their fishing grounds and landing sites through the alternate sea route via Manda-Bruno-Museum-Shela-Lamu which is rough and long. The longer travel time will result into post harvest losses.

This report recommends that the proponent empowers the local fishermen to move to deep waters by providing modernfishing gears and vessels that can enable them venture into other more distant deep water fishing grounds in addition to construction of modern fish landing sites (fishing ports) with adequate infrastructure such as power, access roads and cold rooms or ice making plants.

(4) Impacts on Archaeological, Historical and Cultural Sites

UNESCO inscribed Lamu Old Town on the World Heritage List in 2001. Lamu is the oldest and the best-preserved living settlement among the Swahili towns along the East African coast. Its buildings and applied architecture are the best preserved and carries a long history that represents the development of Swahili technology. With the construction of the proposed port and hinterland, there will be an influx of migrant workers from other districts in search for employment and business opportunities. This can cause a "dilution" of the local culture. Efforts have to be made by the local authority and National Museums of Kenya to preserve and promote the intangible heritage.

There is a chance of encountering archaeological artefacts whilst doing construction works for the port. The proponent should engage NMK to carry out Heritage Impact Assessment (HIA) study prior to construction to avoid damage and destruction of valuable cultural artefacts. The contractor should have procedures and protocols for conserving any artefacts encountered during construction works.

(5) Impacts on Land Ownership

In order to secure the land for the proposed port development project, the proponent will need to acquire land. Land ownership in Lamu district is a highly emotive issue and should be implemented with caution in collaboration with the local authority and the proponent. A detailed Resettlement / Compensation Action Plan has been prepared and would be implemented prior to commencement of the project. The compensation/ resettlement will be carried out by Ministry of Transport as per the Resettlement Action Plan and with the assistance of local authorities.

(6) Induced Risks

Construction of marine structures can be dangerous, with the probability of accidents being high. The contractor will have to apply develop strict **health and safety** rules in conformity with the Factories (Building, Operations and Work of Engineering Construction) Rules 1984, Legal Notice 40.

With the high influx of migrant workers into the area, there will be an increased risk of HIV/AIDS and Sexually Transmitted Infections (STIs) in the area. According to the Government of Kenya, Sentinel Survey of 2006, Coast Province, where Lamu district is found, has a HIV/AIDS prevalence rate of 8.1%. However, NASCOP estimate the prevalence rate in Lamu district at 3.2%. The challenge will be to keep this relatively low prevalence rate with the increase in population.

To mitigate against increase of new HIV/AIDs infections, the County has to project for the increase in population and expand infrastructure to accommodate more hospitals and Voluntary Counselling and Testing (VCT) Centres and initiate Awareness Programs in line with National Guidelines. During construction works, the contractor will be expected to implement an HIV/AIDS Prevention Program that was developed during feasibility studies for this project.

The proposed port development is expected to open up Lamu County and create a new transport corridor that would spur economic growth in Lamu and along the entire corridor including northern and north-eastern parts of Kenya. Due to the magnitude of the project and complexity of activities involved, implementation of the project would result into significant impacts. These

have been identified in this report and detailed mitigation measures proposed in addition to an elaborate environmental management and monitoring plan. A separate Resettlement / Compensation Action Plan (RAP) has been prepared to ensure adequate compensation for socioeconomic losses incurred by Project Affected Persons (PAP) in the course of project implementation.

This Environmental and Social Impact Assessment (ESIA) Report therefore proposes that the project be allowed to proceed on condition that the proponent implements the mitigation measures proposed in this report and any further conditions that may be imposed by NEMA following consultation with Lead Agencies and other stakeholders.

Fig 0-1: Location of Project Area

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Fig 0-2: An impression of the first three berths



Fig 0-3: An impression of the administration area and port office tower

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For and on behalf of The **MINISTRY OF TRANSPORT**.

CERTIFICATION

Certification by Firm of Experts:

We hereby certify that this Environmental and Social Impact Assessment Study report has been prepared in accordance with the Environmental (Impact Assessment and Audit) Regulations, 2003 and the methodology and content reporting conform to the requirements of the Environmental Management and Coordination Act, 1999.

Signature Date6 th February 2013
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AddressP.O. BOX 42269 – 80100 MOMBASA
For and on behalf of: HEZTECH ENGINEERING SERVICES
Certificate of Registration No
Certification by Proponent
We, The MINISTRY OF TRANSPORT hereby confirm that the contents of this report are a true reflection at the site of the proposed port development. We will endeavour to implement mitigation measures proposed in the report to ensure the project complies with applicable environmental regulations.
Name
Signature Date

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Ministry of Transport

ACCRONYMS

AIDS Acquired Immune Deficiency Syndrome

BOD Biological Oxygen Demand
COD Chemical Oxygen Demand
DRC Democratic Republic of Congo

DWT Dry Weight Tonnes

EACC East African Coastal Currents

EAM East African Environmental Management Company Ltd

ECD Empty Container Deport

EIA Environmental Impact Assessment

EMCA Environmental Management and Coordination Act

GDP Gross Domestic Product
GOK Government of Kenya
IMSR Inter Monsoon Short Rains
IMLR Inter Monsoon Long Rains
JPC Japan Port Consultants Ltd

KESCOM Kenya Sea Turtle Conservation Committee

KEFRI Kenya Forestry Research Institute
KARI Kenya Agricultural Research institute

KMA Kenya Maritime Authority

KMFRI Kenya Marine & Fisheries Research Institute

KWS Kenya Wildlife Service KPA Kenya Ports Authority

LAPSSET Lamu Port South Sudan Ethiopian Transport (Corridor)

MOT Ministry of Transport

NEC National Environmental Council

NEM North Eastern Monsoon

NEMA National Environment Management Authority

NGOs Non-Governmental Organisations

NMK National Museums of Kenya

NWCPC National Water Conservation & Pipeline Corporation

OSMAG Oil Spill Mutual Aid Group
OSRAT Oil Spill Response Action Team

PMParticulate Matter Parts Per Million ppm

RMG Rail Mounted Gantry RTG Rubber Tyred Gantry SEC

South Equatorial Current

SLP Sea Level Pressure

SH Stakeholders

SSG Ship to Shore Gantry TDS Total Dissolved Solids TSS Total Suspended Solids TOR Terms of Reference

TEU Twenty-foot Equivalent Unit

TGS Total Ground Slot

UNEP United Nations Environment Programme

UNESCO United Nations Education Scientific & Cultural Organization.

WWF World Wildlife Fund.

MARPOL International Convention for Prevention of Marine Pollution

1. INTRODUCTION

1.1 BACKGROUND

The Government of Kenya (GOK) through the Ministry of Transport plans to build a port at Manda Bay in Lamu. This proposed construction is part of a larger project which plans to establish a transport corridor of road, rail and pipeline linking the proposed port of Lamu through Northern Kenya to South Sudan and Ethiopia. The development of the corridor is considered a flagship project in the country's Vision 2030 Strategy of Growth and Development. It is anticipated that along with Lamu Port, the Corridor will accelerate trade routes and development in the regions traversed by the corridor, in particular the Northern part of Kenya which is still under-developed.

In the late 1970's Kenya Ports Authority (KPA) developed a purpose-build container terminal with a capacity of 250,000 TEUs. During the last decade, the Port of Mombasa witnessed a rapid increase in cargo traffic. Total port traffic rose from 8.44 million tonnes in 1997 to 14.42 million tonnes in 2006. This was a growth rate of 6.1% per annum; thus the number of Twenty-Foot-Equivalent Units (TEUs) rose from 240,698 to 477,355 between 1997 and 2006 respectively. The remarkable growth in container traffic had profound effect of constraining the container handling capacity.

In the year 2000 an explicit need for expansion of the container handling capacity was made to the Government of Japan to be funded through Official Development Assistance (ODA) Loans. Notwithstanding these developments in Mombasa which serves the Northern Corridor, there remains a need to establish another corridor which has considerable potential for the development of other transport corridors not only in the Eastern and Horn of Africa, but also across the continent from east to west. (Japan Port Consultants: Master Plan for Development of the Proposed Lamu Port at Manda Bay).

The current project aims to undertake the construction of the first three (3) berths of Lamu Port at Manda Bay. Project activities would include dredging, reclamation, access road and rail construction at the coastline.

The berth capacities will be as follows::

- Bulk Cargo (1 Berth) 100,000 DWT ships,
- General Cargo (1 Berth) 30,000 DWT ships and
- Container (1 Berth) for 100,000 DWT ships.

The proposed location is ideal because it is naturally deep hence the requirement for dredging would be reduced and it is sheltered from adverse waves.

Pursuant to such works and as stipulated in the Environmental Management and Coordination Act, 1999 the Proponent is required to carry out an Environmentalans Social Impact Assessment (ESIA) study to determine the adverse impacts the project would have on the environment and

propose mitigation measures to eliminate or reduce the magnitude of these impacts. The ESIA Study aims to:

- Examine in detail likely adverse environmental and social impacts directly and / or indirectly attributable to this project
- Appropriate mitigation measures for the identified impacts.
- Equip stakeholders with tools for making informed decisions about key impacts expected to emanate from the project
- Establish environmental and associated baselines for future monitoring purposes.

The ESIA Study includes a full on-site field assessment to characterize the ecological resources present with particular reference to identification of environmentally sensitive areas or species. The possibility of adverse impacts resulting from the implementation of the proposed development was assessed with respect to faunal and floral and other ecological resources associated with the site. In addition project impacts on public health and safety was assessed. This ESIA study report proposes necessary mitigation measures that will greatly reduce or prevent environmental damage that would be caused by the project's activities and outlines an Environment Management Plan (EMP) to ensure compliance with the proposed measures.

1.2 PRESENT ENVIRONMENTAL CONDITIONS IN THE PROJECT AREA

1.2.1 Natural Conditions

Coastal environment is made up of very fragile environments in the region, such as wetland, threatened natural forests, tidal-flats and biodiversity habitat sites.

(1) Mangrove Forests

Lamu County has the largest area of mangrove in Kenya. Although on a straight line basis, the district extends only 138 km southwest from the Somali border, its irregularity and numerous islands gives it a total coastline length of 650 km. The three biggest islands are Lamu, Pate and Manda. Except for the south coast of the Islands of Lamu and the southeast coast of Manda directly exposed to the Indian Ocean, most of the coastal areas are covered with mangrove forests of varying widths (FAO fisheries and aquaculture department, 1986).

Mangrove forests are the cradles of various marine lives and the local communities make use of the mangrove forests for fishing ground but cutting of mangrove trees is still licensed to the local communities. These facts imply that the local communities have a right to use the mangrove forest as their property based on the law/regulations and will request compensatory measures as a part of compensation issues if mangrove habitats are destroyed. The mangrove trees are of economic value and traded around the area as timber for use in various construction activities. The common species found in the Lamu Archipelago are *Sonneratia Alba*, *Rhizophora mucronata*, *Avicennia Marina* and *Ceriops Tagar*.

(2) National Reserves (Dodori/Boni and Kiunga) and UNESCO Biosphere Reserve (Kiunga)

Kiunga Marine National Reserve, a designated UNESCO Biosphere Reserve¹, consists of about 50 offshore islands and coral reefs in the Lamu Archipelago. The larger and more sheltered inner islands are covered with tangled thorny vegetation including grass, aloes and creepers. The small outer islands provide nesting sites for migratory seabirds. The reserve conserves valuable coral reefs, sea grass and extensive mangrove forests and is also a refuge for sea turtles and dugong that are on the IUCN Red List e.g. Hawksbill (CR: Critically Endangered).

Major wildlife includes Reptiles, Sea turtles, Reef Fish, Lobsters, Sea Urchins and Sea Star. It is also an important site for marine sports such as wind surfing, diving and snorkeling, water skiing and sunbathing. The World Wildlife Fund (WWF) and the Kenya Wildlife Service (KWS) have been collaborating to enhance the management of the Kiunga Marine Reserve since 1996 with full participation of local communities.

Dodori National Reserve located adjacent to Kiunga Marine National Reserve was established to preserve a breeding ground for the East Lamu Topi, Pelicans and other local wildlife. It covers 877sq. km with views of Dodori River and creek outlet with the most dense and most varied species of mangrove forest in Kenya. Lion, Lesser Kudu, Giraffe and Hippo which are on the IUCN Red List, are also common to this Reserve. Birds already noted are Palmut Vulture, Southern Branded Harrier Eagle, Honey Buzzard, Brown Hooded Kingfisher, European and Carmine Bee-Eaters, Brown Breasted Barbet and Violet Breasted Sunbird. According to the IUCN and Biodiversity Hotspots web sites, Ader's Duiker is a well-known critically endangered animal living only in the coastal forests of Eastern Africa.

(3) Coral Reef

Coral reefs are among the most productive of all marine ecosystems providing a habitat for numerous species, including turtles, dugongs, whale, sharks and others. Their essential ecosystem services, such as protecting the coastline from ocean waves, and high biodiversity and productivity make them the target of many uses, but also numerous threats (State of the Coast report, NEMA 2009).

Coral reefs in Kenya are managed as Marine Protected Areas (MPAs) under the Wildlife Act. Coral reef fisheries outside protected areas are under the jurisdictions of the Fisheries Department, while only the traditional fishing methods are allowed in Marine Reserves.

(4) Sea Grass

Sea grass beds are important foraging grounds for endangered species such as dugongs and marine turtles and important habitats for various fish species.

(5) Sea Turtle

The Lamu Archipelago is one of the most important feeding and nesting grounds for Sea Turtles in Kenya. Five out of the seven species of sea turtles feed/nest in Kenya waters. All five species are categorized as endangered or critically endangered listed on the IUCN Red list. Female Sea

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¹ A biosphere reserve is a representative ecological area with 3 mutually reinforcing functions: conservation, sustainable development and logistic support for scientific research and education

turtles always return to the beach where they were born and lay eggs on the beaches. Most common three turtles found in the Lamu Archipelago are:. Green Turtle (*Chelonia mydas*)

- Hawksbill Turtle (*Eretmochelys imbricata*)
- Olive Ridley (Lepidochelys olivacea)

The other two kinds are;

- Loggerhead (Caretta caretta)
- Leatherback (Dermochelys coriacea)

The main areas of concentration are said to be Kiunga, Manda Island and Shela.

(6) Dugong (*Dugong dugon*)

The dugong is a large marine mammal categorized vulnerable on the IUCN Red list and designated in the Wildlife (Conservation and Management) Act, Cap 376 as a protected species. They are referred to as "sea cows" because their diet consists mainly of sea-grass. They are particular about their diets, with certain "fields" of sea-grass being regularly cropped. Dugongs are exclusively benthic, or bottom feeders. Their primary feeding mechanism is uprooting sea-grass by digging furrows in the seafloor with their snouts. Though the dugongs are one of the species found in Kiunga National Reserve, there is no information about this species around the project site so far.

In Kenya large dugong herds were commonly reported before the 1960s and a herd of 500 was seen in 1967 off the South Coast. The exact number of dugong in Kenya is currently not known (WWF, 2004). The most important dugong habitats in Kenya are considered to be the Kiunga Marine National Reserve (KMNR) (Nature's Benefits in Kenya, World Resource Institute).

(7) Wildlife

For animals around the area, located near the ecologically significant area, Manda Bay area is rich in biodiversity habitats consisted of shrubs, swamps, tidal-flat and so on. The area is considered Biodiversity Important Area and by KWS.

(8) Vegetation

Lamu district is located in a semi-arid area with sandy soils. Coastal forests and bushland vegetation is seen around the Kenya Navy Naval base. There are also some ponds where wetland plants such as Lotus species are naturally growing. Those ponds are used as water source for animals that inhabit the area. There exist two wetlands on the mainland of Lamu that are the source of drinkable water, supplied by pipelines to the local settlements. Beside the Mangrove forests, on the terrestrial side the vegetation consists of indigenous and planted tree species. Key indigenous plants include Doum Palm (*Hyphaena spp.*) and Mkingiri (*Dichrostachys spp.*).

(9) Tana River Delta

The Tana River Delta is the only estuary that comes under a consistent management umbrella, as it falls under KWS. It has high conservation and biodiversity value. The legal status of estuaries

and deltas remain controversial, as they cut across several jurisdictions (riparian, forest, marine and coastal zone). The Ramsar Convention could be a primary instrument for the conservation of the ecosystem at the national level. An application for appropriate Ramsar designation of the Tana River Delta is under preparation.

1.2.2 Social Conditions

(1) Land Tenure

By the end of the 18th century there were three main population groups at the Kenya coast, namely Arabs, Swahili and Mijikenda. The first two were mainly concentrated in towns and areas near the coast. The Mijikenda majority were living more inland or working as labourers on the Arab-Swahili plantations.

At independence in 1963, there was no action by the government to resettle the local people who had settled on these lands but were regarded as squatters, even though some had lived there for more than a generation. However, the policy of the government has changed to resettle the landless through settlement schemes to cope with the problem of squatters and this process is still on-going.

(2) Land Use and Settlements

Part of the land along the shoreline of the proposed port area is used as Naval Base and private ranch. Along the road D568, a settlement scheme of Hindi-Magogoni area is on-going and the land has been plotted and allocated by the government. The scheme started as the German Assisted Settlement Programmes (GASP) in 1974. GASP provided the necessary infrastructure such as road, water and so on. According to "Lamu District Regional Physical Development Plan", the progress of the scheme is as shown below as of 2007.

Size of the scheme: 7,700haTotal number of plots: 795

Occupied plots: 676Population: 5,800

(3) Fishery

Fishing is one of the main sources of income around the project site. Centers playing the functions as fishing villages are Faza, Kizingitini, Kiunga etc. Those villages also serve the tourist industry. The fishermen in Lamu Island are said to fish individually and sell their catches to the local market or traders who transport them to Mombasa and Malindi.

In Lamu district, the main fish species of catch are rabbit fish, scavenger, snapper, cat fish, cavalla jacks, mackerel, blackskins, barracuda, mullets, queen fish, sail fish, tuna, prawns, lobsters, crabs, and sharks/rays in dried form, sardines, oysters and octopus. Prawns are caught in areas like Dodori creek, exploited by fishermen from Kipungani and Matondoni. Lobster and crab, which represent some of the best in the world, are caught in places like Kizingitini, Faza and Kiwayuu. Kiwayuu also produces sharks and rays for the dry fish market while places like Kiunga

produce shells, lobster, crab and fin fish (Sarah Heddon,2006). The shallow water within the numerous creeks is notable for a very high incidence of Black Tiger Shrimp (*Penaeus Monodon*). Whereas in all other areas of Kenya as well as the Indo-Pacific region, Black Tiger Shrimp would rarely constitute more than five percent of catch, in Lamu the proportion of Black Tiger Shrimp can be as high as 80 percent according to information supplied by project KEN/80/018 staff (FAO Fisheries and aquaculture department, 1986).

(4) Timber Production and Trade

Mangrove forests in Kenya provide many direct products – both timber and non- timber. Timber products include firewood, building poles and charcoal used in urban and rural areas. Poles used in construction are normally graded into different utilization classes depending on their uses. Other uses of mangrove poles include boat masts and fish traps/stakes. Larger logs of mangroves, especially of *A. Marina*, are used in traditional boat construction. Aerial roots of S. Alba are also used as floaters for fishing nets.



Figure 1-1: Mangrove Stock-Pile in Mokowe

Mangrove wood is also utilized by the local communities for furniture. Among the non-timber products derived from mangrove forests include honey harvesting, medicinal values, crabs and fish caught inside the forest (Joseph K. S. et al.).

Historical records show that as early as 200BC mangrove poles were an important item of commerce between East Africa and the desert countries of Arabia. By the 1970's, Kenya was exporting some 34,000 scores of mangrove poles to Somalia, Iran, Iraq, Kuwait and Saudi Arabia, until this export was stopped in 1982 by a presidential ban aimed at stemming overexploitation. As a result, mangrove pole production fell significantly from 1990(State of the Coast report, NEMA 2009).

Local communities are still allowed to cut mangrove trees thus there is a timber industry that supports the livelihood of the local people. There are some shops that sell mangrove polls in Lamu Island and others are transported to the main land through Mokowe.

(5) Limestone

Extensive limestone deposits occur along the coastal area from the Tanzania border in the South to Malindi in the north. A 70-m-thick and 4-8 km-wide band of limestone runs parallel to the coast. Older limestone units occur further inland in the north of Malindi but only a few isolated exposures of limestone are found between Malindi and Lamu. The Coral Rock deposits in the north of Lamu have not been mapped. Exploitation of limestone is already widespread and depends on local variation in the limestone's texture, composition and market demand.



Coral rocks that are excavated and shaped into coral blocks for building are available in large quantities in Manda Island of Lamu district. The production of coral blocks meets local demand in Lamu district, providing a livelihood to many people employed as excavators of building blocks and stone masons in the construction industry.

Figure 1-2: Limestone Extraction (Source: JPC)

Sand and limestone are currently being mined without supporting legislation. Both are non-renewable resources, and if their mining continues unabated, environmental degradation of a wide area is likely to occur. Already, sand exploitation has had detrimental effects, including endangering indigenous forests and depredating ecosystem (State of the Coast report, NEMA 2009).

(6) Transportation

i Road

The carriage units on the roads are buses, *matatu* (minivan) and lorries. A number of buses operate each way between Mokowe and Mombasa. Earlier on, these buses only operated during the day but at present, there are buses that operate during both day and night.

ii Railway

Currently there is no rail network in the district.

ii. Air

In a county like Lamu where road transport is very poor and sea transport is slow and unreliable, air transport emerges as key. There are several airstrips in the district located on Manda Island, at Mokowe, Witu, Mkunumbi, Pate, Siyu, Kizingitini, Kiwayuu, Mkokoni, Kiunga and Mararani.

iii. Sea

Sea transport in the district dates back a very long time and is very important because it links Lamu with other ports in and outside Kenya. There are no roads within the archipelago where

majority of the people live. A movement between islands, therefore, is by sea. Sea transport is also used extensively during the wet season when most roads in the mainland are impassable. Both passengers and goods are carried by small ships, motor-boats and dhows.

Public sea transport is only established within the district. Areas with regular public sea transport are around the islands of Lamu, Manda, Pate, Siyu and Faza. In the rest of the areas such as Ndau, Kiwayuu, Mkokoni and Kiunga, public sea transport is irregular and at times people have come together to hire transport.

Public sea transport outside the region to such areas like Mombasa Malindi and outside the country to destinations such as Dares Salaam and Zanzibar and other parts of the world is not established. There are very few private boats that engage in sea transport to places like Zanzibar and Seychelles. These are mainly for tourists (Lamu District Regional Physical Development Plan).

(7) Public Facilities (Hindi Division)

There are seven (7) primary schools in Hindi division, of which six (6) are located near Hindi or in the south of Hindi. The number of health facilities are: one (1) health center, two (2) dispensaries in the whole division (Lamu District Regional Physical Development Plan).

(8) Water (Hindi Division)

In the division, the main water undertaker is Hindi-Mokowe Water Association (HIM-WA). The association runs three boreholes. Currently at least 30 households had been connected. The rest of the population is served through 20 water kiosks distributed along the pipeline. The installed capacity was 400,000 litres per day whereas the daily demand was 70,000 litres per day. There is need to extend the pipeline further field to serve more people and exploit the excess capacity (Lamu District Regional Physical Development Plan).

(9) Energy

There are two major sources for power in Lamu, namely electricity from the diesel power stations and solar. Solar energy use in Lamu is very minimal and is confined to very few individuals in the rural areas who can afford and also some companies e.g. KPA in the navigational lights in the sea.

The main electric power use in Lamu is mainly household appliances, general lighting, street lighting, small scale workshop i.e. welding etc. There are two diesel power generating station in Lamu District, namely the KenGen Power Station in Lamu Island and Mpeketoni Electricity Company in Mpeketoni (Lamu District Regional Physical Development Plan).

(10) World (Cultural) Heritage

Lamu is the oldest and the best-preserved living settlement among the Swahili towns along the East African coast. Its buildings and applied architecture are the best preserved and carries a long history that represents the development of Swahili technology. The old town is thus a unique and

rare historical living heritage with more than 700 years of continuous settlement. It was once the most important trade center in East Africa before other towns such as Zanzibar took over.

Since the 19th century, Lamu has been regarded as an important religious center in East and Central Africa due to the 'Tarika' (The Way of the Prophet). It is said that there are many descendants of the Prophet in Lamu. Their presence has kept up the tradition, which continues to the present day Lamu in form of annual festival known as 'Maulidi'. These festivals are endemic to Lamu and draw the Muslim community from all over East and Central Africa as well as the Gulf. Lamu is an Islamic and Swahili education center in East Africa. Researchers and scholars of Islamic religion and Swahili language come to Lamu to study this cultural heritage, which is relatively unchanged. The island town has adopted very little modern technology due to its isolation (UNESCO Nomination Dossier, 2000).

(11) Other main Gazetted Historical Sites

There are some gazette historical monuments within and around the project site. Most of them have not been checked well and need archaeological assessment before construction. The relevant monuments to port development are Mkokoni, Mashundwani, Ungu, Kililana, Manda, Takwa, Pate, Shanga and Siyu. Of those, Takwa and Siyu fort are well-known historical sites as well as a tourism spot where the magnificent scenery of mangrove forests and Indian Ocean can be seen at the same time.

1.3 TERMS OF REFERENCE FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

The following Terms of Reference for the Environmental Impact Assessment (EIA) of the proposed project were are adapted in accordance with the World Bank and NEMA environmental impact assessment guidelines.

- 1. <u>Introduction</u> The consultants would identify the development project to be assessed and explain the executing arrangements for the environmental assessment. This chapter would detail the rationale for the development and its objectives.
- 2. <u>Background Information</u> The experts would highlight the major components of the proposed project, the implementing agents, a brief history of the project and its current status including a justification why the project is necessary.
- 3. <u>Study Area</u> Specification would be made of the boundaries of the study area as well as any adjacent or remote areas considered to be affected by the project such as dredged material disposal sites, area projected for relocation of displaced persons, reclaimed land etc.
- 4. <u>Description of the Proposed Project</u> a full description of the relevant parts of the project, using maps at appropriate scales where necessary.
- 5. <u>Description of the Environment</u> Assemble, evaluate and present baseline data on the relevant environmental characteristics of the study area (and disposal sites), including the following:

- a) Physical environment: geomorphology, meteorology (rainfall, wind, waves and tides), sea currents and bathymetry, surface hydrology, estuarine/marine receiving water quality, and ambient noise.
- b) Biological environment: terrestrial and marine vegetation and fauna, rare or endangered species, wetlands, coral reefs, and other sensitive habitats, species of commercial importance and endangered species.
- c) Socio-cultural environment: shipping and fishing activities and use of the port, population, land use, planned development activities, employment, recreation and public health, community perception of the development, vulnerable occupants. Field survey would also be conducted on the number of households to be displaced and areas of resettlement and land acquired for the project.
- d) Hazard vulnerability; vulnerability of area to flooding, hurricanes, storm surge, and earthquakes. Also to be included here is an assessment of impacts of oil spill from ships and from land based industrial activities.

The consultants would characterize the extent and quality of the available data, indicating significant information deficiencies and any uncertainties associated with the prediction of impacts.

- 6. <u>Legislative and Regulatory Considerations</u> A description of the applicable legislation, regulations would be outlined as well as environmental policies that are relevant and applicable to the proposed project. Appropriate authority jurisdictions that will specifically apply to the project will be identified.
- 7. <u>Identification of the Potential Impacts of the Proposed Project</u> Identification of impacts related to port construction, dredging, spoil disposal and possible land filling. Also to be identified are impacts related to construction of the access road, land reclamation and construction of office buildings and associated facilities. A distinction will be made between significant impacts that are positive and negative, short and long term. Special attention would be paid to:
 - Effects of the project (dredging and spoil disposal) on water quality and existing coastal ecosystems and resources,
 - Effects of dredging on the coastal stability of adjacent shorelines,
 - Effects of dredging works on fishermen, and on the rights/operations of any other stakeholders,
 - Effects of the project on future port development and the tourism sector,
 - Effects of the project on maritime, boating and road traffic,
 - Effects of the project on ambient noise levels, and
 - Effects of the project on any historical resources.
- 8. Analysis of Alternatives to the Proposed Project A Description of the alternatives examined for the proposed project that would achieve the same objective including the "no action" alternative. This includes dredging vessel types and disposal sites, alternative traffic routes and alternative resettlement plans. The most environmentally friendly alternatives would be identified and proposed for implementation
- 9. <u>Mitigation and Management of Negative Impacts</u> The consultants will identify possible measures to prevent or reduce significant negative impacts to acceptable levels with

- particular attention paid to compensation of Project Affected Persons (PAPs), dredge material disposal and sedimentation control, as well as measures to minimise disruption to existing operations.
- Development of a Monitoring Plan Identify the critical issues requiring monitoring to
 ensure compliance with mitigation measures and present impact management and
 monitoring plan for such issues.
- 11. <u>Public Participation and Consultation</u> The consultants would identify appropriate mechanisms for providing information on project activities and progress of project to stakeholders, assist in co-coordinating the environmental assessment with the relevant government agencies and in obtaining the views of local stakeholders and affected groups.
- 12. Report Preparation The environmental and social impact assessment report, to be presented in electronic and hard copies, will contain the findings, conclusions and recommended actions supported by summaries of the data collected and citations for any references used in interpreting those data. The report will be prepared in the format prescribed by NEMA.

1.4 METHODOLOGY FOR THE ESIA

The consultants adopted the following methodology in order to fulfil the requirements of the Terms of Reference for the ESIA:

1.4.1 Characterization of the Physical Environment:

An assessment and description was made of physical environmental conditions such as the geomorphic setting, altitudinal range, spatial setting, basin morphology, soil types, bottom sediments / substrata, surface water regime and ground water regime. In particular, the following subcomponents were assessed:

- Geomorphology and sedimentology,
- Meteorology (rainfall, wind, surface hydrology) patterns,
- Oceanography (bathymetry, circulation systems, sea currents {tidal, stream-flow, wind-driven}, winds, pressure, waves and tides),
- The port near shore environment (lagoons, creeks, bays, sub-tidal, intertidal and supratidal environments, estuarine/marine receiving water quality).
- Hazard vulnerability; vulnerability of port near shore environments to flooding, storm surge, and drowning.

1.4.2 Characterization of the Chemical Environment:

This includes a description of the physico-chemical properties of both the surface and subsurface water (including, temperature, salinity, pH, transparency, and nutrients at the sampling point. Attention was paid to physico-chemical characterization sediments beneath the water sampling points as well). The samples were taken to a NEMA approved laboratory (SGS Kenya Limited) for analysis where the following subcomponents will be assessed:

Water Quality

- sedimentation, suspended and dissolved solids
- Salinity/conductivity;

- Dissolved oxygen
- pH, BOD, COD
- Phenol
- Oil and grease content
- Total coliforms
- E. coli

Sediments Quality Survey/Sampling:

Sediment Quality Survey (seabed sediment material sampling) was done at the same sampling as the water quality sampling and the following recorded:

- Sample condition such as appearance, odour, and colour;
- Physico-chemical characterization ambient air temperature, water temperature, pH, redox, BOD, COD, Ammonia nitrogen, Total N, Total P
- Density
- Water content
- Heavy metal content Mercury, Arsenic, Lead, Chromium, Cadmium, Nickel, Iron, Lead, Zinc, Copper

Air Quality Survey

Sampling for air quality was done at selected sampling points close to project area and the following parameters shall be recorded:

- Sampling conditions, such as time, weather (wind direction, wind speed, cloud cover, tidal height, sea state)
- location of the sampling point; sampling depth; latitudes and longitudes
- Air Quality Parameters such as CO, SO₂, NO₂, H₂S, Volatile Organic Compounds (VOC), Suspended particle material (SPM)

1.4.3 Characterization of the Biological Environment:

For each sampling sites and sampling points, this included a description of **vegetation** (including dominant assemblages, dominant species, environmental weeds, species and assemblages of conservation significance, and vegetation cover), **fauna** (including dominant assemblages, dominant species, species of conservation significance, populations, and alien invasive and vermin/pest species), and **habitats** (including major types and biological significance of each). In particular, the following subcomponents were assessed:

- a) Marine Habitats and Species: sensitive/critical habitats potentially impactable:
 - Mangrove and other wetlands community sites
 - Coral reef and sponge community sites
 - Seagrass community sites
 - Rocky platforms with attached/sessile life-forms (encrusting algae, mussels, oysters, barnacles, etc)
 - Soft bottom communities with macro-benthos
 - Sand, shingle or pebble shores (including sand bars, spits and sandy islets, sand dunes, etc)
 - Estuarine waters (permanent water of estuaries and estuarine systems of deltas)

- Species of special/commercial concern such as sea cows, marine turtles, waterbirds, migratory shorebirds, terrestrial birds large fish such as elastobranchs, sharks and rays as well as rare and endangered species as per IUCN red-listings.
- Species with potential to become nuisances or vectors

b) Terrestrial Habitats / Species:

Flora:

- Wild plants floristic composition, physiognomy and growth form, ethnobotany, economic species, endangered and rare species,
- Crop and plantation plants

Fauna:

- Invertebrates, small fauna and burrowers
- Visiting populations: birds, reptiles
- Wildlife populations conventional big animals, bats,
- Livestock populations domesticated animals

1.4.4 Socio-economic Survey

This included an assessment of present social conditions of local residents such as livelihood, security, health and education and providing the relevant information on the social characteristic of the area including:

- Demographics
- Socio-economic profile
- Socio-cultural profile
- Land use activities
- Social infrastructure (households, schools, health facilities, water, electricity, roads, sanitation etc).

The information was obtained by literature review and site visits to obtain information at the micro-scale, validate the same and fill gaps where necessary.

Resettlement Survey

Through demographic studies and socio-economic activities, the built up environment was studied to identify all the facilities that will be uprooted by the proposed development and the owners of these facilities. The consultants then prepared a Resettlement Action Plan (RAP) report detailing the number of people affected, loses incurred and the compensation mechanism.

1.4.5 Fishery Survey

The fishery survey was undertaken through the identification of the fishing grounds, the fishing villages, the fish landing sites, the amount of fish landed, the marketing arrangements, the income generated from fishing and the impact the sector will suffer from the proposed development, i.e. loss of the fishing villages, fishing grounds, landing sites, loss of incomes, loss of employment, poverty situation as a result of the loss, and the available alternatives.

For all thematic areas the following were undertaken:

- A report was prepared documenting findings from the survey;
- Identification was made of the potential impacts that may arise from implementation of the project;
- Mitigation measures have been prescribed to address adverse negative impacts;
- A monitoring plan has been prepared to ensure that the prescribed mitigation measures are undertaken and the desired results achieved;
- Conclusions have been drawn on environmental sustainability of the project and the acceptability of the proposed project to local residents.

9. FISHERIES ASSESSMENT

9.1 METHODOLOGY

The main source of information on catch and effort data was from fisheries statistics obtained from the fisheries department. Field surveys were also conducted at various landing sites to quantify the fish catches and species of fish caught. Field visits to the fishing grounds and key breeding sites were done and key areas identified. This information gave the spatial scale of catch and effort in the proposed project area. The fishers were also consulted to understand their views in relation to the port development and the perceived impacts from construction of the three berths and the general port development.

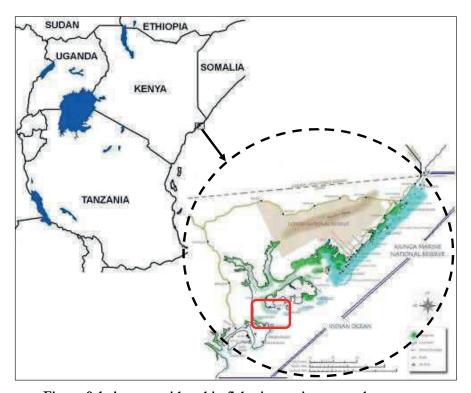


Figure 9-1: Area considered in fisheries environmental assessment

Map showing the north coast Kenya and the Lamu-Kiunga marine waters (encircled dotted line). The location of the proposed project is within the Manda Bay (red line) lying between Manda, Siyu and Pate Islands in the Lamu archipelago.

9.2 FISHERIES STRUCTURE

Fishing remains an important source of revenue for Lamu district and an undisputed age-old source of livelihood for the coastal fisher communities. Important species of these marine waters and the Lamu archipelago include marine Crustacean such shallow water, lobsters and crabs. Fishing is largely undertaken in the near shore waters and according to statistics Lamu

archipelago is an important fishing ground for both resident and migrant artisanal fishers of the Kenya coast.

Over 50 marketable finfish and shellfish species inhabit the waters of Lamu and are target for both the commercial and artisanal fisheries. Dominant families included Carangidae, Serranidae, Scombridae, Lutjanidae, Siganidae, Haemulidae, Mullidae, and Mugilidae. Decapods of the family Panuliridae dominate the crustacean catch.

9.2.1 Fishing effort and Facilities

The fishing grounds within 5 nm offshore are mainly utilized by the artisanal fishers while industrial fishers purse seine and long line boats fish beyond 5nm. Most of the fishing boats are non mechanized using mainly sails. A few motorized vessels are also recorded, belonging mainly to traders who also supply gears and other supplies to the artisanal fishers.

There are a total of 1026 boats within Lamu fishery waters with 246 fishers recorded as foot fisher. In the proposed project area there are 640 fishing crafts. Fishers in this area use *Mashua* and *Hori* type of crafts propelled mainly by sails. There are 19 fish landing beaches as shown in Figure 9-2. Two landing sites will be lost completely as they occur in the mainland. Landing sites in Pate island will be affected if fishing activities will be disrupted. There are approximately 4,111 fishers in the Lamu District (Fisheries Department, frame survey 2012). Those fishers who will be directly affected by the proposed construction are 3,170.

In Faza division there is a fish cold storage facility which is meant to serve fishers from the county by provision of ice and cold storage.

Table 9a: Craft types and the number of fishers per craft (Frame survey 2012)

Craft type	Numbers of crafts	Crew numbers
Mashua	248	2354
Ngalawa	5	24
Mtori	53	521
Dau	5	36
Hori	187	843
Dugout	41	87
Foot fisher	-	264



Figure 9-2: Fish landing beaches

9.2.2 Fishing areas and breeding grounds

Fishers from Faza (Rasini) and Ndau are known to fish in fishing grounds within the Manda and Kizingitini channels. Kizingitini, Mbwajumwali and Shanga fishers fish in the open sea with Pezali rocks most preferred by lobster divers. They also fish in the Manda bay during the south east monsoon winds. A lobster fishery survey conducted in 2011 in Kizingitini estimated the Catch Per Unit effort (CPUE) at 0.72kg lobsters/fisher/day for fishers at Pezali fishing grounds. Fishers from Shanga- (Shanga Rubu and Shanga Ishakani) fish at the Manda channel. Matondoni and Kipungani fishers access their fishing grounds in Ndununi and Dodori creeks in the proposed port berth areas. A key shrimp fishing area is within the proposed fishing port at Ndununi area.

The mangrove ecosystem is important as nursery and breeding ground for most fish species. The shrimp fishery has its juveniles using the mangrove habitats as feeding grounds before they migrate into the open waters and recruitment into the fishery. The area proposed for construction of the three berths is a key breeding and nursery ground.

9.2.3 Fish catch data

Fishing activities are more intense during the Northeast monsoon when the sea is calm and the fishers are able to access their fishing grounds. It is during this season when migrant fishers from

other locations visit the productive fishing grounds of Lamu County. There are several peaks in a year and this is depended on the fishery targeted in two monsoons seasons. Landings peaks in May and September in Kizingitini figure xxx while no varying trends in fish landings from Amu and Faza areas.

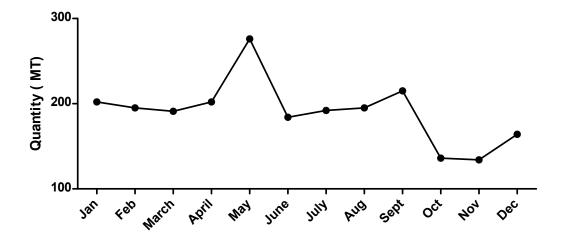


Figure 9-3: Target Species Landed Fish/Crustacean in the Area- Fisheries Department Data

Fisheries catches show no generalized trends (Figure 9-3). In the landing sites of the Amu, Kizingitini and Faza divisions of Lamu County, high fish production is noted for demersal fish species and crustacea especially rabbit fish, scavengers, lobster, crabs and shrimps. Lobster, crab and sea cucumber are commercially important fisheries exploited for either domestic tourism market or for export market. Crabs fishing is largely in the mangrove areas, while lobsters are fished in the reef areas and some important fishing grounds area at the Manda channel include the Pezali rocks. Five species of spiny lobsters inhabit the marine waters of Kenya but only three; Panulirus ornatus, P. longipes, P. homarus are commercially important, supporting the main fishery within the Kizingitini lobster fishing areas. Lobsters generally occur in the rock crevices and therefore distributed at varying depths and habitat types.

Shrimp fishing is within the creeks of Ndununi and Dondori. Fishers from Matondoni and Kipungani fish mainly for shrimps. The most common shrimp species in the creeks are Giant tiger shrimps (Penaeus monodon) and Indian Banana shrimps (P. indicus).

Fishing is the primary occupation to 89% of the investigated households in the seascape Based on data collected by WWF-Kiunga. Almost 50 % of the marine catch in the district is consumed locally, while the rest is transported to markets outside the district including Malindi and Mombasa. Species of high economic value include the spiny lobsters, mangrove mud crabs, and sea cucumber.

10. SOCIO-ECONOMIC ASPECTS OF THE PROJECT

10.1 INTRODUCTION

The socioeconomic study was undertaken in order to establish baseline data and information that will be used towards monitoring the impacts of the project on the local communities and other stakeholders. This study therefore provided an avenue for the local communities and other stakeholders to air their views and perceptions about the project. It also provided an opportunity for the project EIA team to engage the local communities and other stakeholders in a participatory manner in the identification of people who are affected by the project so as to prescribe mitigation measures that should be put in place in order to eliminate or minimize the negative effects of the project. The monitoring plan and mitigation measures that resulted from this study will help to reduce damage caused by the project's activities to the social, cultural and economic wellbeing of the local communities and other stakeholders

10.2 METHODOLOGY

10.2.1 The study site

The study was carried out at the areas that are likely to be affected by phase I of the project such as Kililana, Pate, Faza, Amu, Shella, Matondoni, Mokowe and Bargoni. Kililana is the site where the port offices and staff houses will be constructed. It is linked to the main Lamu-Mombasa road by an access road that was recently constructed. The construction of the access road and the port headquarters has already affected the local communities whose land and other property have been taken over. Bargoni and Mokowe areas are going to be affected by the land based activities while, Shella, Amu, Matondoni, Pate and Faza will be affected by the sea-based activities such as construction of a causeway, 3 berths, actual shipping and other related activities. Other more distant fishing villages that depend on the fishing grounds along the port site are also likely to be affected by the first 3 berths in one way or another.

10.2.2 Methods of data collection

The socioeconomic assessments involved collection of both secondary and primary data and information. Literature review was carried out to obtain relevant secondary data and information from publications, official Government documents and records, technical reports held by different agencies and other grey literature (unpublished materials). Primary data and information was collected from the different categories of stakeholders in the project area. These stakeholders included the Lamu Port Steering Committee, local community, Government agencies, NGOs and CBOs in the project area. Data was collected from 150 respondents. A combination of four primary data collection techniques were used namely questionnaires, key-informant interviews, focus group discussions and direct observation as follows:

1. Questionnaires: Two sets of questionnaires were prepared and administered to different stakeholders. One set was administered to the local community while the other set was administered to all other stakeholders. The two sets of questionnaires have both closed and open-ended questions. The open-ended questions that are normally used in semi-structured interviews were included in the questionnaires to make it possible to probe for answers and

create room for two-way interactions and exchange of information between the interviewer and the respondent. At the end of each day, the research team sat together to review the results.

2. Key-informant interviews: Key-informant interview technique was used to gather information from the opinion leaders in the project area. The snowball method (in which information is gathered by asking an initial informant to suggest other informants) was used to identify key informants in the project area. The key informants included members of the Lamu Port Steering Committee, religious leaders, women group leaders, political leaders (Councilors), leaders of youth groups such as Promise Ahadi Youth Group, leaders of some strategic NGOs and CBO such as Secure Kenya, Kenya Marine Forum, teachers and other people who hold respected positions in Lamu and could therefore provide insights on many issues that needed further clarifications.



Fig 10-1: The consultants engage PAP at a consultative meeting in Lamu Fort

- 3. Focus group discussions: Focus group discussions were conducted with particular focus on BMU officials and members from various sites to represent the interests of the artisanal fishers, women groups, youth groups, and other social groups. Each focal group consists of 5–12 participants. A discussion guide (a set of open-ended discussion points) was used to prompt participants into free discussions focusing on the issues under the study.
- 4. Direct observation: Direct observation was used to watch events as they unfold in the area and explore key features of human activity. The information gained from the observation formed the basis for detailed interviews with the stakeholders. It was also useful in confirming some issues that came up during the semi-structured interviews and focus group discussions. During observation, questions were asked about the cultural property, land tenure, economic activities and challenges that the local people faced in the area. The questions concentrated heavily on issues that could not be observed.

10.2.3 Data collection procedures and formalities

The research team conducted themselves well in the study area to ensure that they respected the cultures of the communities under study and observed the acceptable norms. This was important because the success of socio-economic studies depend to a large extent on the approach and conduct of the research team.

10.2.4 Data analysis

Qualitative data was coded for ease of analysis. A code sheet was developed and refined and open ended questions recorded. Open-ended questions were summarized and coded in a meaningful manner. Data entry and analysis was done in MS-Excel and Statistical Package for Social Sciences (SPSS). Data from each respondent was entered in separate columns and the data cleaned using frequencies and cross tabulation outputs. Statistical analyses were conducted on the quantitative data while content analysis method was used to analyze the output from the focus group discussions.

10.3 RESULTS

10.3.1 Demographic Characteristics Lamu County

The available and most detailed demographic information on Lamu County which houses the project area is from the national population and housing census of 2009. This census is consistently conducted after every ten years and the results just came out in 2010. Based on this census a summary of selected demographic information is presented in Table 1 below. According to the 2009 census results, the number of households in the larger Lamu County has risen from 15,006 households in 1999 to 22,184 households in 2009 and population has increased from 72,686 people in 1999 to 101,539 people in 2009. The population density has also increased from 12 persons per square kilometer in 1999 to 16 persons per square kilometer in 2009. While it may appear that this population density is way below the national population density of 66 persons per sq. km, some divisions such as Amu have relatively higher population densities of 224 persons per sq. km (Table 1). It is worth noting that population density is higher in areas that depend mainly on fisheries and other marine resources for livelihoods and income (Figure 2). This implies that population pressure in the Lamu County impacts more heavily on fisheries and other marine resources than on terrestrial resources. It is worth noting that the population size and density has changed significantly between 1999 and 2009.

Table 10a Population by Sex, Number of Households and density in Lamu County (source: 2009 census report).

Division	Location	Sub-	Male	Female	Total	Households	Density
		location					
Amu	Mkomani	Mkomani	3,565	3,475	7,040	1,620	1,424
	Langoni	Langoni	4,901	4,892	9,793	2,281	3,304
	Shella/Manda	Shella	1,201	981	2,182	514	126
		Manda	681	411	1,092	371	29
	Matondoni	Matondoni	844	831	1,675	377	110

		Kipungani	350	234	584	109	27
Sub-Total			11,542	10,824	22,366	5,272	224
Hindi	H/Magogoni	Hindi	3,124	2,322	5,446	1,187	21
		Bargoni	1,192	864	2056	366	3
	Mokowe	Mokowe	1,342	1,222	2,564	596	52
		Kilimani	363	271	634	137	19
Sub-Total			6,021	4,679	10,700	2,286	9
Mpeketoni	Mpeketoni	Kiongwe	1,288	1,171	2,459	527	142
		Central	3,568	3,448	7,016	1,838	250
	Mkunumbi	Mkunumbi	3,580	2,984	6,564	1,638	5
	Ndambwe	Ndambwe	463	490	953	194	36
	Bahari	Bahari	1,857	1,725	3,582	783	55
		Tewe	1,435	1,214	2,649	589	44
	Hongwe	Hongwe	2,480	2,339	4,819	1,100	67
		Bomani	2,268	2,010	4,278	1,000	75
	Mapenya	Mapenya	1,144	1,034	2,178	438	140
		Uziwa	1,045	984	2,029	417	101
Sub-Total			19,128	17,399	36,527	8,524	21
Witu	Witu	Witu	1020	1106	2126	414	89
		Pandanguo	2677	2489	5166	1031	9
	Didewaride	Moa	1814	1754	3568	667	11
		Chalaluma	1229	1016	2245	428	82
Sub-Total			6,740	6,365	13,105	2,540	13
Faza	Faza	Kwatini	597	578	1175	240	472
		Kwatongani	652	659	1311	275	167
	Pate	Pate	1104	1149	2253	458	85
	Siyu	Siyu	610	560	1170	250	40
		Shanga	339	320	659	113	102
	Tchundwa	Tchundwa	910	868	1778	305	263
Sub-Total			4,212	4,134	8,346	1,641	105
Kizingitini	Kizingitini	Kizingitini	1573	1581	3154	529	5096
	Ndau	Ndau	404	450	854	168	623
		Kiwayu	286	259	545	115	115
	Mbwajumwali	Myabogi	977	1047	2024	347	184
Sub-Total			3,240	3,337	6,577	1,159	371
Kiunga	Kiunga	Rubu/Mwa mbore	1259	944	2203	447	6
		Mkokoni	361	302	663	118	4
	Basuba	Milimani	323	279	602	108	1
		Mangai	116	136	252	47	1
		Mararani	103	95	198	42	0
Sub-Total			2162	1756	3918	762	2

The larger Lamu County consists of five administrative divisions namely Kiunga, Kizingitini, Faza, Amu and Mpeketoni divisions.

10.3.2 Gender, age characteristics

Survey results show that about 80% of the respondents were men while 20% were women. Respondents were in the age of 20 to 80 years with the average age of 44 years. Most of the respondents (86%) were married and had families to take care of.

10.3.3 Education characteristics

The respondents were characterized by low levels of education with most of them (about 84%) having attained different levels of primary education, madrassa (Islamic education) or no education at all (see Figure (10) - 1). Only 6% of the respondents had attained complete secondary education while 4% had attained incomplete secondary education. Furthermore, less than 6% had attained tertiary or university education.

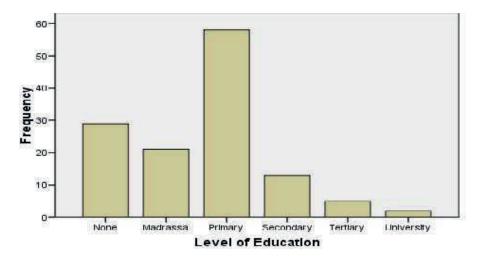


Figure 10 - 2: Distribution of levels of education among the residents

A significant disparity in levels of education was found between men and women in the project area (see Figure (10) - 2). Women dominated the section of population who never attended school as well as those who only acquired basic literacy and madrassa while the section of population that had attained secondary, tertiary, university and youth polytechnic levels of education were dominated by men.

Overall, Lamu County has a total of 70 primary schools with 22,633 pupils, 11 secondary schools with 972 students, less than 5 tertiary learning institutions which include a youth polytechnic and some commercial colleges and adult literacy classes with no credible enrollment statistics available. The teacher to pupil ratio is: 1:40 and 1:39, in public primary and secondary schools respectively. Overall, 66.4% of the county residents possess primary education whereas 9.7% of the population have earned secondary education; placing the county at the 30th and 35th positions

in the same order for the national counties' educational ranking. However, a high rate (73.2%) of the entire population is literate in spite of little formal education, a fact that is attributed to the vast influence of the prominent Islamic religion (over 70%) that promotes religious classes during childhood – usually referred to as *madrassa*.

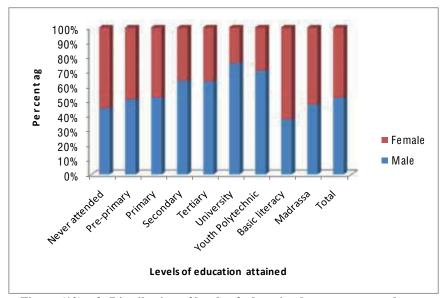


Figure (10) - 3: Distribution of levels of education between men and women

Household roles

Most of the respondents (over 84%) were household heads that were responsible for providing food, shelter, clothing and other needs to their households. They are also responsible for taking decisions on behalf of their households. 13% were housewives while 3% were dependants. There is gender distribution of roles in economic activities within the project area. For example fishing and mangrove cutting are mainly male occupations. Some boats that facilitate these activities are however owned by women but women are generally not involved in actual fishing or mangrove cutting. Women participate mainly as fishmongers.

Dwelling characteristics

The study has revealed that 83% of the respondents are permanent residents of Lamu and live in their own houses. Only 17% live in rented houses.

Health

Lamu County has a total of 42 health facilities which are spread in different levels as follows: one (1) district hospital, two (2) sub-district hospitals, twenty (20) dispensaries, five (5) health centres, thirteen (13) medical clinics, and one (1) nursing home. The most notable Hospitals within the county are: Lamu District Hospital, Faza Sub-District Hospital and Mpeketoni Sub-District Hospital. Besides, there is a very low doctor to population ratio (1:36, 343) but very high infant mortality rates (72/1000) and an even higher under five mortality rate of 123/1000. These high

figures could be attributed to few deliveries in health centers (29.6%), and even fewer qualified medical assistants during births (27.2%). However, most children within the county have undergone all vaccinations (80.5%). The most prevalent diseases in the county are malaria, respiratory tract infections and skin diseases.



Fig 10-4: One of the temporary dwelling structures affected by the project

10.4 SOCIO-CULTURAL PROFILE

The inhabitants of Lamu (the project area) are mainly the Bajuni and Boni people. In terms of population size in the entire Lamu County, the Bajuni people are the most dominant community. They live along the coast and their traditional livelihoods include fishing which is their main occupation, mangrove harvesting especially at Ndau, subsistence farming and animal husbandry. The Boni people live inland in the forested areas and their traditional livelihood is hunting and gathering, but this is gradually changing and they have started practicing small-scale agriculture and harvesting forest resources such as honey. The population of the Boni is very small compared to Bajuni and they are considered a threatened tribe categorized by the World Bank as Indigenous People. The Kenyan Constitution also categorizes the Boni community under the Vulnerable and Marginalized Groups that need special considerations in developmental projects.

Islam is the primary religion in the project area with about 96% of the people being Muslim. This implies that any interventions that target the livelihoods of the local communities must take cognizance of the values that are enshrined in the Islamic faith.

The area that borders the project site in the north especially Kiunga was affected by the political instability in Somalia and the "Shifta" problem that caused people to migrate from their homes to settle in areas that were perceived to be relatively safer. This interfered with peoples' way of life. Up to now, some villages such as Rubu and Mwambore are still largely unoccupied since those who lived here migrated to Pate Island to settle at Shanga. Apart from the migrations due to political instability, the migrant fishermen from other areas have also influenced the social

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dynamics of the villages where they temporarily settle. In many cases the migrant fishermen camp and fish for weeks or months, before they travel back to their homes.

10.5 LIVELIHOODS AND ECONOMY

The study has revealed that economic activities vary from place to place. Overall, fishing and farming are the main economic activities in the Lamu County and the project area in particular. At the Mokowe-Hindi-Kililana-Baragoni stretch, agriculture is the most dominant occupation. The same applies to Pate village.



Fig 10-5: Enumeration of crops and trees in Kililana area

On the other hand, at Amu, Matondoni, Faza, Kizingitini, Kiwayu, Shanga and Kiunga artisanal fishing is the main occupation. Other occupations that were reported by a section of the population as their main occupations are small scale business, pastoralism and casual labour. Other important occupations that did not come out explicitly during the interviews are mangrove cutting which is mainly practiced by the inhabitants of Pate and Ndau. Table (10) - 1 shows the relative importance of these occupations at the project area based on our survey results (the survey was conducted at Amu, Shela, Matondoni, Pate, Faza, Kililana, Mokowe, Bargoni). Basically the results in this table show that farming and fishing are the most dominant sources of livelihood and income. Small-scale business ranks third. It is however surprising that tourism was identified by only 2% of respondents.

Table 10b: Distribution of Occupations in the Project Area

Occupation	Proportion of respondents	
Agriculture	47%	

Fishing	25%
Small scale business	11%
Formal employment	5%
Pastoralism	4%
Casual labour	3%
Tourism industry	2%
Other	3%
Total	100%

10.5.1 Fisheries

The waters adjacent to the whole of Lamu County are known to be the most productive area in Kenya, with the most valuable species being shrimps and lobsters. The local communities are well-known for their fishing skills as well as skills in boat building, sailing and other marine activities. 4,111 fishers operate in the Lamu County (Fisheries Department, 2012). On average, Lamu County landed between 1,500 and 2,000 metric tons of fish per year between 2000 and 2008, of which about 40% is sold to other areas outside Lamu County. Fishing is more intense during the Northeast monsoon (September to February) when the sea is calm and fishermen are able to access their fishing grounds without fear of capsizing. In addition, migrant fishers from outside the Lamu County also arrive mostly during the Northeast monsoon season.

The main species of fish landed from the artisanal fishery of Lamu include lobsters, rabbit fish, scavenger, snapper, catfish, cavalla jacks, mackerel, barracuda, mullets, queenfish, sailfish, tuna, prawns, crabs, sharks and rays, sardines, oysters and octopus. While most of these fish are commonly landed from the fishing grounds within the Lamu Archipelago, lobsters and crabs are mainly fished in Kizingitini, Faza, Kiwayu and Kiunga.

The distribution of fish landing beaches that are recognized by the Fisheries Department is shown in Table 2. Most of the landing sites are within Faza, Amu and Kizingitini Divisions reflecting the dispersion of fishing activities within the area. Fishers from most of these landing sites often share the same fishing grounds some of which are within the project site.

Table 10c: The main fish landing sites in Lamu County excluding sites at Mpeketoni and Witu (Fisheries Department Frame Survey, 2006)

Division	Landing site
Faza	Dodori, Shanga Ishakani, Shanga Rubu, Tchundwa, Rasini, Pate
Kiunga	Kiunga, Mkokoni
Kizingitini	Kiwayu, Ndau, Mbwajumwali, Kizingitini
Amu	Langoni (Amu), Shella, Mkomani (Amu), Matondoni, Kipungani
Hindi	Ndununi, Mokowe

The importance of these fish landing sites was also echoed by the respondents during our study.

a) Trends in fishing effort

Table 3 shows the trends in fishing effort between 2004 and 2008. The trends in fishing effort has been captured in terms of the number of fishers, fishing crafts and fishing gears in Lamu County based on the frame surveys that were conducted by the Fisheries Department in 2004, 2006 and 2008. The 2008 survey indicated that there are 22 fish landing sites and 21 BMUs. The frame surveys have shown that the number of fishers in the county increased by 73% between 2004 and 2008 while the number of fishing crafts increased marginally by less than 1%. In addition, the artisanal fishers use non-motorized sail boats to conduct their fishing operations. In fact the non-motorized sailboats constituted 77% of the total enumerated crafts during 2008 frame survey. This shows that artisanal fishing is still carried out using traditional fishing crafts which cannot venture into open sea especially during rough conditions. Motorized vessels using outboard and inboard engines constituted only 9% of the total crafts, similar to those using paddles.

The fishing gears that are commonly used include gill nets, hand lines, beach seines, long lines, fence traps (uzio) and basket traps (malema). In addition diving masks are used to fish for lobsters. Gill nets constituted 37% of all the gears followed by long lines that constituted 22%, handlines (12%), monofilament nets (10%) and traps (8%). Other gears encountered were prawn seines (2.5%), beach seines (4.9%), troll lines (1.4%), cast nets (0.2%), spear guns (0.6%) and reef seines (0.1%).

Table 10d: Fisheries Frame survey summary statistics for Lamu District 2004-2012 (Source: Fisheries Department Frame Survey Report, 2012).

	2004	2006	2008	2012
No. of fishers	1104	1344	1912	4,111
Fishing crafts	395	347	429	756
Gillnets	2308	876	830	954
Long lines	1140	798	461	4,548*
Hand lines	648	440	249	360
Monofilament	358	196	568	881
Traps	352	286	248	291
Beach seines	102	370	54	97
Pawn seines	55	86	137	71
Trolling lines	27	34	98	14
Cast nets	14	0	5	4
Spear guns/harpoons	0	0	63	549
Reef seines	0	12	0	-
Scoop nets	276	440	394	371
Number of landing	22	22	21	19
sites				
Landing sites with	9	7	21	19
BMUs				

^{*}number of long line hooks

The frame survey data showed a consistent decline in the number of fishing gears between 2004 and 2008 but the trend changed in 2012 when the number of fishing gears generally increased.

For example, it is evident that the number of gill nets decreased by approximately 64% between 2004 and 2008, handlines declined by 62 between 2004 and 2008, longline declined by 60% between 2004 and 2008 and traps declined by 30% between 2004 and 2008. The reasons for the massive decline are not yet clear but probably some fishers did not show their gears for enumeration during the 2008 frame survey. It is also interesting that the trend has changed in the 2012. It is only a few gears that showed some increase for example, the number of monofilament nets that showed a threefold increase between 2006 and 2008, prawn seines more than doubled between 2006 and 2008 and trolling lines also increase almost three fold between 2004 and 2008. However, the trend for these last two fishing gears has also changed in 2012 when their numbers have radically decreased.

In terms of spatial distribution of the fishing gears, gill nets are dominant at Kiunga, Kizingitini and Amu locations while beach seines are prevalent in Faza, Kizingitini and Amu. Hand lines were found to be dominant at Hindi location. Troling lines, scoop nets and long lines were found to be used at Amu and Faza.

b) Fishing grounds

A number of fishing grounds were identified by the fishers who operate in the project area. These fishing grounds include:

- Dodori creek
- Ndununi creek
- Kiweni
- Bahari
- Shella
- Mkanda
- Manda

From their characteristics, most of these fishing grounds are within the port area and are mainly sheltered areas where fishers operate comfortably with their traditional fishing crafts and gears. It was noted that even Dodori creek which may appear to be slightly outside the site where the first 3 berths will be constructed is an important fishing ground for fishers from Matondoni who still have to pass through the port area in order to reach Dodori creek where they fish for prawns. Only a few boats are able to venture into the open waters but even where this is possible, the fishers are constrained by lack of gears that are appropriate for deep water fishing.

c) Fishing routes

The fishers often travel to fish in their preferred fishing grounds. It was interesting to notice that the fishers from Matondoni depend on the Channel (Mkanda) as their main route as they head towards Dodori and Ndununi creeks where they fish for prawns. The fishers from Amu and Shela also confirmed Mkanda as their main route to reach their fishing grounds. It was also interesting that the same sentiments were echoed by fishers from Faza and Pate who on the other hand rely on Mkanda to reach Lamu Town where they have a big market for fish and fishing equipment. The fishers who operate from Bandari ya Bwana Mkuu as well as those from

Mokowe and Ngiini also use the channel. The fishers from other fishing villages such as Faza, Kizingitini, Kiwayuu and Kiunga will also be affected by the project since they share the same fishing grounds. The primary source of livelihood in these villages is artisanal fishery that depends on the market in Lamu. All fish landed is sold to traders who operate from Lamu town using boats equipped with ice-boxes to preserve fresh fish.

d) Fisheries Management and conservation in the project area

Fishery is managed by the technical arm of the Ministry of Fisheries Development, the Fisheries Department. To promote co-management in the fisheries sector, the Fisheries Department established Beach Management Units (BMU) in all the main fish landing beaches. Besides the Fisheries Department, the Kenya Wildlife Services (KWS) is responsible for managing the Kiunga Marine National Reserve (a marine protected area). WWF, an international conservation agency, has also contributed immensely towards building capacity in co-management and environment conservation in the Lamu Archipelago.

The Beach Management Units (BMUs) at Amu, Shela, Pate, Shanga Rubu and Shanga Ishakani have established the Iweni Community Conservation area which they manage jointly. These BMUs benefit from the conservation area by collecting revenue from tourists who visit the site. The revenue is shared between these participating BMUs with much support towards education, schools and health issues. The BMUs perform their duties in accordance to the Fisheries (BMU) Regulations, 2007. Their core mandate is co-management and environmental protection for sustainable fisheries. They generate their income from fisheries and related activities. The revenue that is generated from this community conservation area will be lost since the site falls within the project site around Manda Bay.

10.5.2 Agriculture

Subsistence and cash crop farming is carried out by the communities who live in the rich agricultural areas in Hindi, Pate, Mpeketoni and Witu Divisions of Lamu county. Many households that engage in fishing and small scale business as their main occupations also practice agriculture as a supplementary source of livelihood and income. The food crops that are grown in the county include maize, beans, cowpeas, sorghum, squash, bananas, pawpaw and millet. Cash crops on the other hand include cashew nut, mango, sesame seed, coconut, citrus fruit, bixa and tobacco. About 9,214 acres of land is under cash crop production.

Agriculture which is the most dominant occupation providing livelihood to 51% of the respondents is based on the availability of rich agricultural land in the project area. Mixed farming which involves both food crops and cash crop grown together is a common practice. Focus group discussions revealed that cashew nut was introduced by the colonial government in the area, to date the cashew nut trees are spread in the entire project area. As a result, the area has cashew nut trees that are at different stages with most of the cashew nut trees being over 10 years old. The cashew nuts are sold to agents who buy them from the farms/homes and transport to where processing is done. The farmers therefore have a reliable market for their cashew nut. Some of the farmers have built their homesteads in their farms so that they are able to manage their crops themselves while other farmers have employed farm workers who have settled in the

farms with their families to take care of the crops. It was evident from the visits made to these farms that there are genuine farmers from the local communities who have either lived in the area or developed their farms with tree crops over many years. Their rights to ownership of land cannot therefore be questioned. The Hindi settlement scheme has also introduced a new phase of commercial farming in the area.

Livestock rearing is also an important occupation in the project area. The farmers in the project area keep some livestock such as goats and poultry. Outside the project area of Kililana, there are households at Bargoni, which depend on pastoralism as their main source of livelihood. These households keep large herds of cattle, goats and sheep. Some households also keep bees on smallholder basis.

10.5.3 Small-scale business

Small scale business is practiced by 11% of the households as their main occupation. It includes small businesses such as shop-keeping, fish trade, groceries, food kiosks, coconut trading, and thatch (*makuti*) making and selling.

10.5.4 Tourism

Tourism is another occupation that employs a section of the population especially in Lamu town. Lamu town is historically known for cultural tourism. The tourists are mainly attracted by the rich culture and the existence of unique heritage sites, hospitality of the local people, rich biodiversity and the beautiful scenery in the archipelago. Other tourist attractions which are marine-based include activities such as diving, snorkeling, surfing, fishing, donkey races and dhow trips. Consequently, different categories of hotels have been built at the seafront in the main town and at Shella beach. These hotels thrive on tourism that reaches its peak in November-January and during the 'Maulidi' and Lamu Cultural Festivals. Different categories of restaurants have also been built to meet the demand in the tourism industry. In addition, there are two tourist hotels (resorts) at Mkokoni and Kiwayu Island.

The hotels and restaurants provide direct employment and market for local products thus directly supporting the economy of Lamu. Indirectly, the hotels and restaurants provide an opportunity for many people who obtain their livelihood by offering supportive services especially at the jetty when tourists arrive. Their services include tour-guide services, directing visitors to the available hotels and assisting with transportation of luggage to the hotels at a fee.

A number of boat operators are also supported by the tourism industry. Both speed boats and the traditional wooded-sail boats are available to provide transport to tourists to attraction sites. 118 youths have registered as boat operators in Lamu. Each transport boat supports 10 people but only 2-4 crew members accompany the tourists at a time. Members of the boat operators association are trained on safety measures, swimming and rescue. If the tourism projects are managed properly, such projects may provide a market for local products as well as employment.

The few tourism establishments in Lamu have experienced a major recession in the last 3-4 years. This is attributable to rising insecurity in the horn of Africa region due to the instability in Somalia.

10.5.5 Mangrove harvesting

Lamu area is historically associated with flourishing mangrove trade and transportation to Arabia following the monsoons. The international trade continued until the government banned export of mangroves in the 1980s. It was observed that trade in mangrove poles is still an important economic activity. The mangrove forest resources of the broader Lamu County contribute significantly to the local livelihoods and income. This area has approximately 20,000 hectares, which is about 40% of the country's mangrove forest cover. While mangrove harvesting is not a main occupation in most of the villages, about 90% of the households in Ndau sub-location and a number of the households at Pate depend entirely on mangrove cutting as their main occupation. The mangroves are mainly cut from Manda, Ndununi, Bwari, Kidasini, and Ndau. The mangrove cutters travel to these mangrove areas by sailboats (jahazi), which are traditional vessels with each having a capacity crew of six. Mangroves poles that are harvested are of different sizes and uses. These include boriti (Lamu roof), pau (roofing), vigingi (for fencing and construction of wall) and fito.

The mangrove poles are cut and sold to dealers who transport them to Lamu town by boat. The local people also cut mangroves for their own use. The demand for mangrove poles from the Lamu archipelago is high because the poles are tall, straight and resistant to termite attack. It is however worth noting that the key informants felt that the mangroves are being over-exploited and there is need for a mangrove management plan to be developed and implemented. Besides the mangrove poles and other wood products that support the economy of Ndau and Pate villages, the local communities also harvest other non-wood products such as honey, fish, crab, animal fodder and medicine from the mangrove forests.

10.5.6 Exploitation of terrestrial forests

Lamu district has 9,533 ha of non-gazzeted forest out of which 4,673 ha are terrestrial forests. Large areas of forest land fall within non-gazetted areas. This presents a serious challenge to the Kenya Forest Services' effort to conserve forests. Charcoal burning and firewood collection are major economic activities from the non-gazzetted forest areas. It was established during the study that the Kenya Forest Service did not undertake an independent study before the port development project or after the clearance of the 2 ha of mangrove forest in Kililana. However a private consultancy (ESF) conducted a risk assessment with focus on the likely effect of oil spills on Lamu mangroves. A report from the Kenya Forest Services has shown that the agency was not directly involved in the decision to clear the first 2 ha of mangrove forest in Kililana.

Lack of formal land ownership and prevalence of self-allocation of land by individuals has accelerated forest degradation in the project area. Since most forest land is government land, individuals have cleared forests and bushes for charcoal burning, agriculture and for settlement including in the Hindi - Magogoni area. Charcoal burning is serious issue since it is being commercialized to serve the increasing island populations.

It may not be possible to replant an entirely cleared mangrove field. To increase forest cover in the district three strategies and measures have been taken namely: preparation of more tree nurseries and encouragement of farm forestry; initiating annual enrichment planting of mangroves in affected areas e.g. areas affected by disease, dredging or cutting. The third approach is use of CFAs as a means of promoting sustainable forestry e.g. through encouraging ecotourism ventures.

10.6 LAND TENURE

Like other parts of the coast where land along the coastal strip is owned by absentee landlords, land tenure in Lamu has remained unresolved for long with the local communities, the Boni and Bajuni communities, living as squatters without land titles for years.



Fig 10-6: Verification of Plot Boundaries

Consequently, land has remained public (in the hands of the Government) except in places such as Mpeketoni and parts of Hindi that have been converted into settlement schemes and land parcels formally allocated to people and ownership documents issued. Notably, lack of land titles (or any form of ownership documents) by the local communities has created significant discontentment.

In order to address some of the land issues that arose at the project site at Kililana, studies were conducted by different Government departments in Lamu County to evaluate lost property within the boundary wall affected by the project at the time of groundbreaking in March 2012. The lands report was meant to identify the land ownership and acreage for the affected people. A second report that was prepared by the District Agricultural Officer enumerated crop losses by each farmer. A third report was done by the Lamu Port Steering Committee. These three reports were submitted to the County Commissioner and were found to differ on the exact numbers affected. This may be due to the differences in area and scope of coverage by each and the

hurried preparation before the ground breaking. As a result these reports may have missed some landowners.



Fig 10-7: Consultation with PAP in Hindi area

The affected land owners in the area can be categorized into 3:

- (i) Land owners within the 1.3 sq. km project area who lack ownership documents but have ancestral claim.
- (ii) Land owners outside the 1.3 sq. km project area who lack ownership documents but have ancestral claim.
- (iii) Land owners outside the 1.3 sq. km area who have ownership documents. This category of land owners are mainly found in the Hindi scheme.

Some of the salient issues that were raised by the respondents regarding land

- Most of the households that are affected by the project only have ancestral land ownership without any supporting documentation from the government i.e. title deeds or allotment letters.
- The households and farms already affected by the access road also lack supporting documentation from the government i.e. title deeds or allotment letters yet they have ancestral ownership of their land.
- The only people who have ownership documents are those within the settlement schemes
 most of whom are not indigenous people. There is apparent skewed allocation of title
 deeds where schemes such as Mpeketoni-1977, Hindi-Magogoni-1983 and Witu-1988
 mainly benefited non indigenous groups and were swiftly allocated land with ownership
 documents.
- Residents and land owners were evicted without due process by KeNHA for the highway construction.

- There is urgent need for compensation for the project affected persons some of who are already displaced while others cannot productively use their land and property due to anxiety.
- There was concern as to whether the compensation process would take into account the
 projected increase in land value as a result of the port development and the attendant
 speculative activities.

10.7 CULTURAL AND HERITAGE SITES

10.7.1 Lamu Old Town

Lamu is the oldest and the best-preserved living settlement among the Swahili towns along the East African coast. Its buildings and applied architecture are the best preserved and carries a long history that represents the development of Swahili technology. The old town is thus a unique and rare historical living heritage with more than 700 years of continuous settlement. It was once the most important trade center in East Africa before other towns such as Zanzibar took over.



Fig 10-8: A cultural property in Siyu

Since the 19th century, Lamu has been regarded as an important religious center in East and Central Africa due to the 'Tarika' (The Way of the Prophet) activities introduced by Habib Swaleh, a Sharif descendant of Prophet Mohamed (P.B.A.H). It is said that there are many descendants of the Prophet in Lamu. Their presence has kept up the tradition, which continues to the present day Lamu in form of annual festival known as 'Maulidi'. These festivals are endemic to Lamu and draw the Muslim community from all over East and Central Africa as well as the Gulf. Lamu is an Islamic and Swahili education center in East Africa. Researchers and scholars of Islamic religion and Swahili language come to Lamu to study this cultural heritage, which is relatively unchanged. The island town has adopted very little modern technology due to

its isolation (UNESCO Nomination Dossier, 2000).UNESCO inscribed Lamu Old Town on the World Heritage List in 2001. The justification for the inscription is as a result of the following:

- Lamu is the oldest and the best-preserved Swahili town in East Africa dating back to the 12th century.
- Lamu 'exhibits an interchange of human values over a span of time on developments in architecture,' with its unique fusion of Arabic, Indian, European and Swahili building styles.
- The town has continuously been inhabited since its foundation.
- Lamu is a reservoir of the Swahili culture and plays an important role as a religious
 Islamic centre as well as Swahili education centre for whole of East Africa.

Due to the above, Lamu meets criteria (ii) and (vi) of the test of authenticity in accordance with the Operational Guidelines as follows:

Criterion (ii): The architecture and urban structure of Lamu graphically demonstrate the cultural influences that have come together there over several hundred years from Europe, Arabia, and India, utilizing traditional Swahili techniques to produce a distinct culture.

Criterion (iv): The growth and decline of the seaports on the East African coast and interaction between the Bantu, Arabs, Persians, Indians, and Europeans represents a significant cultural and economic phase in the history of the region which finds its most outstanding expression in Lamu Old Town.

Criterion (vi): Its paramount trading role and its attraction for scholars and teachers gave Lamu an important religious function in the region. It continues to be a significant centre for education in Islamic and Swahili culture.

10.7.2 Current Information and Request from UNESCO

According to the document (WHC-09/33.COM/7B) on the UNESCO Web site, as a result of consultations between the Ministry of Transport and National Museum of Kenya (NMK), it has been agreed that both the Ministry of National Heritage and NMK will be consulted at all levels and a Cultural and Archeological Impact Assessment will be carried out before the port development commences. In November 2008, the NMK convened a UNESCO donors' conference and the conference agreed that the development of the new port should respect all the historical sites in the area. All the above-mentioned facts will be taken into consideration for the entire study.

According to the document (WHC-10/34.COM/7B.Add.2), with regard to the Lamu Port Project, UNESCO recommended that a comprehensive EIA be well integrated with the cultural assessment and archaeological report of the NMK. Aspects to be addressed in the cultural assessment are to be focused on protecting the Outstanding Universal Value (OUV) 2 and authenticity and integrity of the World Heritage property, and include impacts on tangible and

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intangible heritage of the property, impacts on artisanal fishing industry, impacts on population increase in the district, increase in informal settlement, impacts of demographic change, impacts of labor migration, visual impacts, impacts on sea current and coast edge vegetation, loss of archaeological deposits and sites.

10.7.3 Maulidi (Festival)

Since the 19th century Lamu has been regarded as an important religious center in East Africa. Every year, thousands of pilgrims from the region flock to Lamu town for the famous Maulidi, or Milad-un-Nabi, celebrations that are held during the third month of the Muslim calendar to mark the birth of the Prophet Mohammed. The East African Maulidi is believed to have been started by HabibSwalehJamalely, a Comorian Arab who emigrated to Lamu and established himself as a scholar and doctor of traditional Arabic medicine. He was a pious man whose deeds are still emulated today, as exemplified by Maulidi. The Maulidi celebrations are known to bring people from as far as the Comoros, Sudan and Democratic Republic of Congo (NMK).

10.7.4 Other main Gazetted Historical Sites

There are some gazette historical monuments within and around the project site as shown in Most of them have not been checked well and need archaeological assessment before construction. The relevant monuments to port development are *Mkokoni, Mashundwani, Ungu, Kiliana, Manda, Takwa, Pate, Shanga, Siyu*. Of those, Takwa, Siyu fort and Pate are well-known historical sites as well as a tourism spot where the magnificent scenery of mangrove forests and Indian Ocean can be seen at the same time.

i. Takwa Mulinga Ruins

A mosque, houses, a well and other structures and also a pillar tomb are located on this site at the point where Manda Island is almost bisected by a tidal channel. Site is a national monument. Archaeological potential above average because of the number of surviving structures (NMK Document on Lamu Sites, 2010).

ii. Siyu

Still inhabited, this settlement lies on the landward side of Pate island at end of shallow winding creek. Many ruins including 19 stone houses, 3 mosques some still in use. Remains date to 18th Century onwards. It also has town walls, 4 gates and residential houses. Siyu fort is also located within Siyu village (NMK Document on Lamu Sites, 2010). NMK and the Government of China have embarked on an archaeological survey to establish whether a Chinese trade ship sunk north of Pate Island approximately 600 years ago. This will look to give a better understanding of the history of Lamu.

iii. Pate

An assessment at Pate revealed that the entire Pate old town (the current Pate village) is a heritage site consisting of historical prison, town wall, custom house, royal family grave yards, 9 gates surrounding the historical town and residential houses. In addition, there is Mbui at Mtangawanda. It was also noted that the Pate community has preserved its heritage. We however noted that the some parts of the monument are threatened by human activity with some areas

being converted into smallholder farms. The historical town covers 68 acres and had a population of 48,000 people living inside the town wall. The population has since then decreased to approx. 4,000 people who occupy only 30% of the 68 acres. There is fear that people would buy part of the land and construct new buildings hence destroying the heritage. All these monuments are under the management of the National Museums of Kenya.

10.8 PERCEPTIONS ABOUT THE PORT CONSTRUCTION PROJECT

Majority of the community and other stakeholder who were interviewed have expressed their support for the project. 89% of the respondents stated that the port will benefit the local community by opening up the area through the construction of a tarmac road (see Table (10-5). A good road will open the area for development, improve transport and investment including attracting more public transport vehicles.



Fig 10-9: One of the PAPs expresses her views during consultation in Hindi

Those who live at Bargoni have had perpetual transport difficulties and they believe that the project will stimulate transport flow in the area thereby making it easy to commute and transport farm produce and fish to the market. However, there is a strong feeling that the community needs should be considered in the project including adequate compensation and resettlement where necessary. Where compensation is involved, it should include compensation for lost land, issuance of title deeds and provision of passage to the fishing grounds. In addition, the fishers should be empowered with better fishing gears and boats so that they can access the alternative fishing grounds. Employment opportunities should also be provided to the local communities.

Table 10e: Perceptions about the project in the Area

Perception	Proportion of respondents
The project is good since it will benefit will improve	89%
transport and open up the area for development	
Accepted only when adequate compensation is provided	10%
Against the project	1%

A section of the community (1% of the respondents) however fears that the project will result in to an abrupt relocation that might lead to loss of un-harvested farm produce, loss of land and source of livelihood. Some people stated that the project will displace fishers from their traditional fishing grounds and landing beaches thus disrupting their livelihood. They are therefore only ready to accept the project if adequate compensation and resettlement is provided.

Those against the project cited lack of consultations with the project affected persons, inadequate disclosure of project information, poor approach to land acquisition that caused tension and hostility among the local communities, and the general suspicion that the local communities may be marginalized by the project.

In general the proposed Lamu Port project is acceptable to the Lamu community due to the following expected benefits:

- The new port project will open up Lamu County for business and development that will benefit the people of Lamu by
- Facilitate marketing of fishery products
- Opportunity to reduce piracy due to increased security in the Lamu county

However the residents are categorical that their concerns, in particular compensation for loss of land and livelihood has to be addressed to their satisfaction in the process of implementing the project.

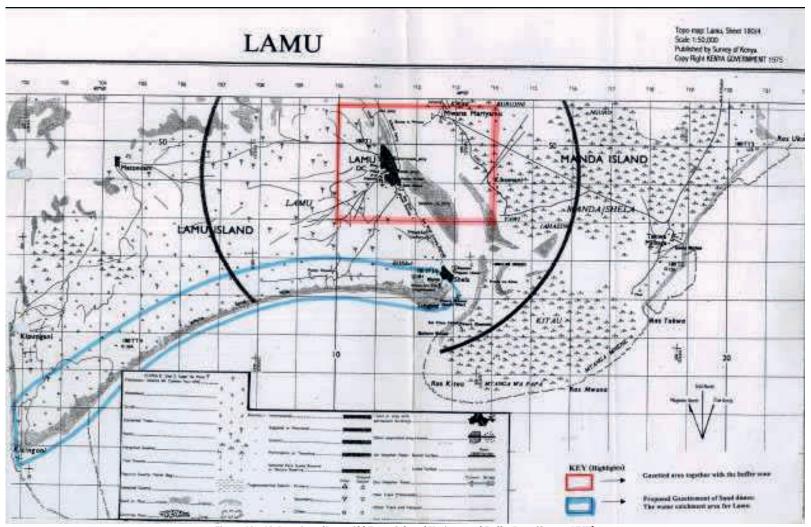


Figure 10 - 10: Location of Lamu Old Town Cultural Heritage and Buffer Zone (Source: NMK)

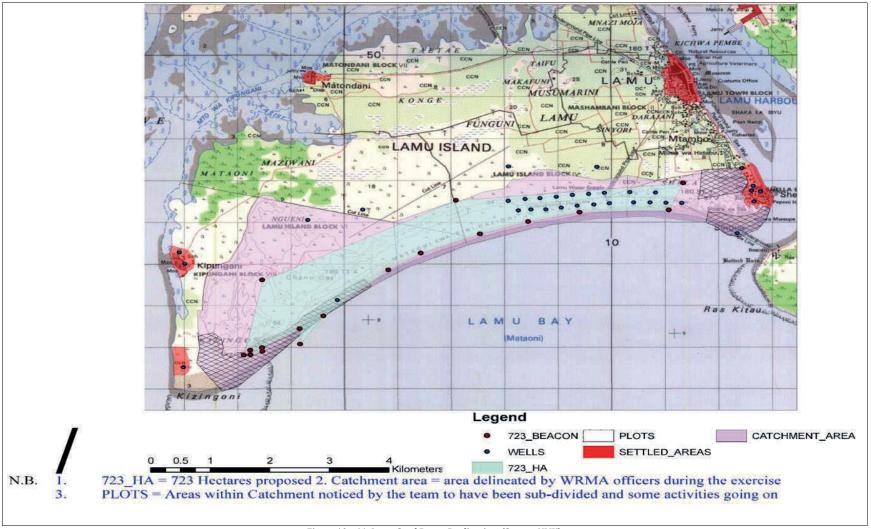


Figure 10 - 11: Lamu Sand Dunes Dealination (Source: NMK)

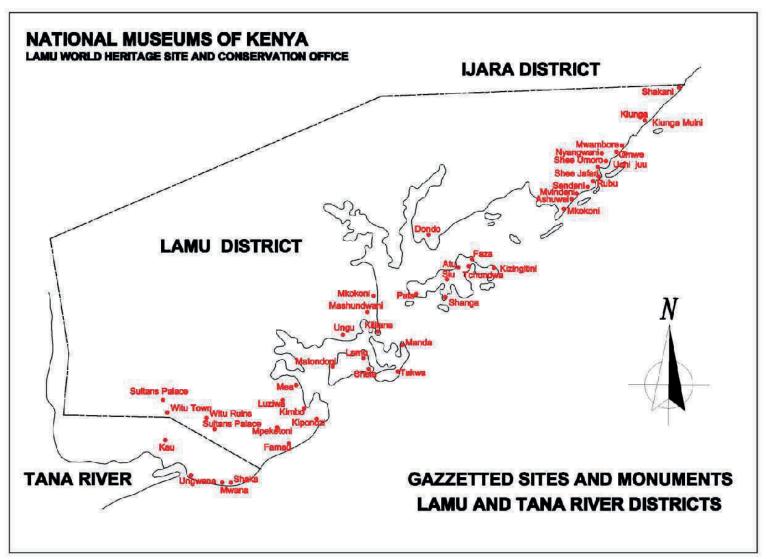


Figure 10 - 12: Lamu Gazetted Sites and Monuments in Lamu District (Source: NMK)

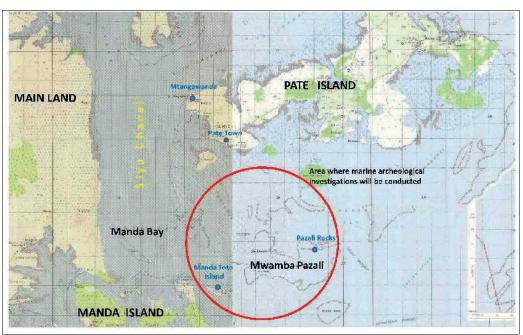


Figure 10 - 13: Location of Marine Archeological Survey Areas(Source: NMK)

Annex FR6 Lamu County, Lamu County Spatial Plan (2016-2026), 2017 (Extracts)

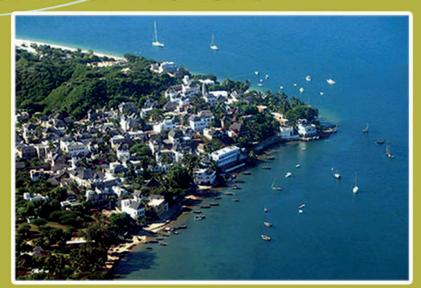




LAMU COUNTY SPATIAL PLAN (2016 - 2026)

ABRUDGED VERSION





VOLUME II

MAY 2017

EXECUTIVE SUMMARY

The second volume of Lamu County Spatial Plan is intended for a quick perusal and grasping by interested parties especially policy makers, implementing agencies and development partners. Methodological approach and detailed sectoral analysis are in the first volume of the County Spatial Plan. This volume comprises key components of the spatial plan namely; a summary of the existing situation, interpretation of the spatial possibilities and constraints in form of spatial concepts, sectoral perspectives, synthesis and formulation of the Integrated County Spatial Plan, a land use zoning framework for the implementation of the plan proposals, plan implementation strategy, the County Investment Programme, and finally monitoring and implementation.

The fulcrum of the Lamu County Spatial Planning exercise is the detailed analysis of the existing situation based on an accurate GIS base map that brought out the configuration of sectors on space as well as the spatial interpretation of possibilities and constraints. The existing spatial analysis is composed of the natural capital (geology and soils, rainfall patterns, solar and wind, biodiversity and conservation, marine resources) its relationship with social economic system of the County leading to various outcome; cultural and heritage capital of the County; the people of Lamu and the growth in numbers projected from a detailed trend analysis from 1969 to date and beyond to 2028; land and human settlements within the County, their distribution and level of services; the economic base of Lamu or livelihoods (agriculture and rural development, livestock and range management, fishing, tourism and heritage, public sector, commerce and trade); transport, infrastructure facilities and services (both Physical & Social Infrastructure) and; Governance & Institutions (functions, of executive, policy arm and planning organisation at the County level).

As aforementioned this gave the consultant the ability to step up the spatial analysis to unique spatial interpretation of the Lamu County Space as constitutionally defined. This translated into spatial concepts that provide various possibilities and constraints for development besides highlighting the various conflicts involved (Human/Wildlife conflicts, Farmers/Pastoralists conflicts, Established livelihoods/LAPSSET development related conflicts etc). The spatial concepts as shown in detail on a map within the text are:

The Shielded Hinterland, The Productive Scapes (Agriculture), The Productive Scapes (Livestock), The Punctures Scapes, The Tana Delta Foot print, The Strategic Gates, The Port Precinct, The Archipelago, The Pristine Ecosystem, The Mangrove Ring and The Blue Pearl.

This spatial interpretation gave the basis of juxtaposition of the sectoral perspectives in a way analysing its current location, distribution and contribution to the quality of life in the County. The approach on sectoral perspectives was: formulation of the strategy, objective, characterisation of the issues, policies to address the issues, action to be taken in specific areas to solve as a solution to the issues. The broad sectors at this juncture are: Natural Resources and Environmental Conservation: Transport and Accessibility: Land and Human Settlements; Education; Health; Water and Sanitation; Energy and Communication; Safety and Security; Economy and Livelihood; Recreation and Open Spaces; Community Development; and Institutions and Governance. Moving to integration it implies merging the sectoral perspectives with the spatial concepts and being able to develop or define the utilisation of space to march the vision developed in the process of the Spatial Planning for the County.

Emerging from the spatial concepts and related to sectoral perspectives in a highly summarised form are key broad areas around which planning issues and opportunities isolated from analysis converge. These planning issues and opportunities are:

- Conservation of the natural heritage of Lamu County and by extension the Country
- The pattern of human settlement and by extension concentration of human activities
- Livelihoods of Lamu, (the productive scapes)
- Tourism and heritage (Wildlife, Culture & Marine Tourism)
- · Infrastructure facilities and services
- Institutions and Governance

The findings in the above areas explain what is happening to the County of Lamu in an integrated County Spatial Framework that meets the aspirations of the Lamu people, as expressed in the vision. From the integrated County Spatial Plan, the consultant stepped it down to the County Land Use Zoning Framework, the Plan Implementation Strategy showing projects in various parts of the County specifically wards, the Capital Investment Programme, and

the Monitoring and Evaluation Framework of the Plan. It should be emphasized that the Integrated County Spatial Plan of Lamu confediverse benefits to multiple stakeholders as well as to posterity. The diverse benefits are: economic; social: environmental; publication administration; and political in nature. The second volume of the plan is as elaborated.

R. K. Mbwagwa Principal Consultant

	015 – Geographical information system	1241 35121 — Lamu Southern Sudan Edilopia Transport Corridor
C.C. – County Commissioner	GoK – Government of Kenya	LAWASCO - Lamu Water and Sewerage Company
C.O. – Chief Officer	GTZ - German Organization for Technical Cooperation	MIPC – Manda Island Port City
CBNRM - Community Based Natural Resource Management	HIMWA – Hindi Magongoni Water Association	MP – Member of Parliament
CBO – Community Based Organizations	IBA – Important Bird Areas	NCIC - National Cohesion and Integration Commission
CCS – Comprehensive Community Strategy	ICT – Information Communication and Technology	NEM – Northeast Monsoon
CDF - Constituency Development Fund	ISUDP – Integrated Strategic Urban Development Plan	NEMA- National Environmental Management Authority
CEC – County Executive Commissioner	JKUAT – Jomo Kenyatta University of Agriculture and Technology	NGO – Non-Governmental Organization
CFA – Community Forest Association	K.D.F. – Kenya Defense Forces	NLC – National Land Commission
CGL - County Government of Lamu	K.P.R. – Kenya Police Reservists	NMK – National Museums of Kenya
CGTR - County Government of Tana River	KAA – Kenya Airports Authority	NMT – Non-Motorized Transport
CIDP - County Integrated Development Plan	KENHA – Kenya National Highway Authority	PPPS – Public Private Partnerships
CIP – Capital Investment Plan	KENTTEC - Kenya Tsetse fly and Trypanosomiasis Eradication	RAP – Resettlement Action Plan
CSO – Civil Society Organization	Council	SEM - Southeast Monsoon
CSP – County Spatial Plan	KeRRA – Kenya Rural Roads Authority	
CURP – Center for Urban and Regional Planning	KETRACo - Kenya Electricity Transmission Company	SEZ – Special Economic Zone
CWCC – County Wildlife & Conservation Committee	KFS – Kenya Forest Service	SoK – Survey of Kenya
DNR – Dodori National Reserve	KFS – Kenya Forest Service	TARDA - Tana Athi River Development Authority
DPS – Development Partners	KIP – Kenya Institute of Planners	TJRC - Truth Justice and Reconciliation Commission
EEZ – Exclusive Economic Zone	KMA – Kenya Maritime Authority	UNESCO – United Nations Educational, Scientific and Cultur Organization
EMCA – Environmental Management and Control Act	KMNR – Kiunga National Marine Reserve	VCT – Voluntary Counseling and Testing
ESIA – Environmental and Social Impact Assessment	KNBS – Kenya National Bureau of Statistics	VIP – Ventilated Improved Pit
FBO – Faith Based Organization	KPL Company	WFE – Witu Forest Ecosystem
FGD – Focused Group Discussion	KPLC – Kenya Power and Lighting Company	WRM – Water Resource Management
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FGM – Female Genital Mutilation	KPR – Kenya Police Reservist	WRUA – Water Resource Users Association
FPE – Free Primary Education	KU – Kenyatta University	WWF – World Wildlife Fund
FSE – Free Secondary Education	KURA – Kenya Urban Roads Authority	

GASP – German Assisted Settlement Programmes

GIS - Geographical Information System

KWS – Kenya Wildlife Service

ABBREVIATIONS & ACRONYMS

FY - Financial Year

LAKWA - Lake Kenyatta Water Association

LAPSSET – Lamu Southern Sudan Ethiopia Transport Corridor

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CHAPTER 1: SUMMARY OF THE EXISTING SITUATION

OVERVIEW

Emerging Planning problems are presented according to the sectors under analysis. These sectors are: Physical, Natural Resources and Environment; The People of Lamu, Heritage and Culture; Land and Human Settlements; Economic Base of Lamu County; Transport, Infrastructure Services and Utilities; and Institutions and Governance.

PHYSICAL, NATURAL RESOURCES AND ENVIRONMENT

- Planning problem and opportunities singled out from the above broad sector during the analysis are as presented below:
- Lamu County is generally flat with a low gradient and therefore prone to flooding during rainy seasons on land, and periods of high tides on the shore-scape bordering the sea. It has three distinct landscape units namely: the seascape unit (that is at zero altitude and contains the blue pearl); the immediate coastal plain landscape unit; and gentle rising landscape unit.

GEOLOGY AND SOILS

- The County's geological structure sits on a basin with a succession of sediments in which a sequence of conformities has developed leading to a great area of hydrocarbon potential both on land and sea. This provides a high chance of the presence and discovery of oil and natural gas; the result of which has been the identification of current natural gas and oil exploration blocks.
- Its geological structure is characterised by variation in grain sizes, porosity, permeability, compaction, texture, and cementation thereby influencing ground water availability.

- The County has soils of varied characteristics, i.e., texture, depth and potential for different farming activitiesdepending on availability of water. The variety of crops grown in the County and available agro ecological zones attest to this fact.
- Availability of fresh water in lakes, swamps, seasonal and permanent rivers, is a great asset to the County. The fresh water sources, however, are increasingly facing degradation due to excessive utilisation by human settlements and grazing. A case in point is the drying up of Lake Kenyatta which is an important source of fresh water for farmers in Mpeketoni settlement scheme.
- Beaches and sand dunes serve important public functions as recreation areas and a protective wall against tidal waves respectively. These are important public assets that require careful Planning interventions for posterity. They have been greatly encroached upon by human activities and greed of land market forces.

CLIMATE

Lamu County experiences inadequate rain. In addition, the rainfall is highly variable spatially. It has a bimodal rainfall pattern occurring in March to May and October to December, and average quantity of about 540mm annually. Rainfall is highest along the immediate coastal plain with rainful of 1000mm recorded in the areas of Witu, Mpeketoni and in Lamu archipelago but it decreases as one moves away to the rising landscape unit.

GREEN ENERGY

 The County is richly endowed with a variety of green energy sources. These are solar, wind and tidal waves. It experiences wind speeds of 100knots which is adequate for wind power generation. Besides wind potential, Lamu also has high solar irradiation of 1900-2500 Kwhr/m², highest near the sea and decreases as one moves away from the

- sea. This is more environmentally friendly than the proposed Amu Power Plant.
- The monsoon winds influence the movement of goods and services in the Indian Ocean especially with regard to small scale sea vessels and fishing activities. The onset of monsoon winds creates different seasons and is also associated with variations in the roughness of the sea, which, by and large, determine the safety of sea transport.

BIODIVERSITY AND CONSERVATION

- A large part of the County, approximately 18% has both protected and community forests that provide various biodiversity benefits to the County. They are habitat to wildlife and various bird species, and also form part of the conservancies found in the County. Large parts of forested area contain tsetse fly which has influenced human settlement in the County. They do contain also wet lands, and swamps besides being part of livestock and wildlife grazing and migration zones.
- Human activities such as settlement, farming as well as land needs for national infrastructure projects, however, pose a threat to the County's biodiversity.
- Implementation of major National infrastructure project (LAPSSET) is set to enhance access and enhance employment opportunities however it has adverse impact on existing natural resources ie the Mangrove forest and the migratory route for Wildlife. The County Spatial Plan takes this into consideration and points to the requirement of integrating wildlife movement channels with the LAPSSET project.
- The green mangrove ring that forms the interface between the land and the sea is a great natural land mark of Lamu County. This natural landmark-containing over 70% of the Country's mangrove resources. However, the forest faces

threat of destruction due to indiscriminate logging, reclamation of sea front, and implementation of national development projects (LAPSSET) which will lead to a clearance of 16Km stretch of the mangrove for the Port of Lamu project causing adverse impacts on diversity and livelihoods.

MARINE RESOURCES

The Indian Ocean has a variety of resources that can be a gamechanger in providing employment and generating revenue necessary to grow the economy of the County. These Marine resources include marine parks at Kiunga, a variety of sea fish, sea grass, coral reef, sea turtle, oil and natural gas.

SOLID WASTE DISPOSAL

Dumping of sea vessels on the sea shoreline coupled with open solid waste-in the erstwhile aesthetic view of the sea-is an eye sore to the citizens and visitors. Recycling of waste is definitely a good opportunity for the youth of Lamu County.

THE LAMU ARCHIPELAGO

- The Lamu archipelago contains 57no Islands. These Islands include, Amu, Manda, Pate, Ndau and Kiwayu which are fairly large and provide habitat for the Swahili Culture.
- Amu Island, apart from being a world Heritage site according to UNESCO.
- The archipelago contains several archaeological/ Historical sites of great significance such as the TAKWA ruins which are important assets for tourism developments.
- Lamu County has a complete package of tourism potential that is enviable. This comprises; culture and heritage; wildlife and bird species; and sea sport and beaches

THE PEOPLE OF LAMU, HERITAGE AND CULTURE

Emerging Planning issues and opportunities are as explained below:

- The County has sparse population distribution. This pattern
 of distribution is partly influenced by the rainful
 distribution, availability of arable land, availability of social
 services, accessibility, and livelihood opportunities. Most of
 the Lamu population is concentrated within the immediate
 coastal plains and archipelago.
- The current composition of the population is cosmopolitan
 and to some extent represent the face of Kenya. However,
 there are local indigenous communities who fell threatened
 by the growing number of migrants moving to Lamu in
 search of land for agriculture and settlement. There is need
 to identify the local communities and protect their land
 rights. The County Government working in consultation
 with the National Land Commission have responsibility to
 insulate these communities by registering their land rights
- Population of Lamu County is rapidly rising as supported by the mean growth rate from 1969 to 2009 of about 4.8 percent. In-migration from other parts of the Country due to the intended development of the LAPSSET infrastructure project and periodic movement of pastoralists in search of pasture during the dry season greatly contributes to the growing population. It creates demand for settlement and associated facilities and services leading to encroachment into protected and fragile spaces within the County; not to mention the declining per capita space.
- The County experiences relatively high infant and child mortality of 76 and 116 per 1000, as compared to the National average. This is an indication that public health related to children and education of mothers must be looked into.
- Lamu County has one of the highest maternal mortality rates of 676 per 100,000 live births and a high female mortality rate of 1000. This is attributable to cultural practices of giving birth at home as well as accessibility to health facilities. Accessibility to health facilities, education of women and awareness, as such, are crucial in improving maternal health in the County.

- In the Analysis, it has been noted that there is bias propagated against the girl child with regard to access to education and employment opportunities.
- There is rapid growth in the formation of households in Lamu as seen from the projections. It is a pointer to the need for provision of well-Planned human settlements with services where housing can be availed.

LAND AND HUMAN SETTLEMENTS

- The County has vast earth surface land as well as marine land both of which have unique characteristics and potentials for varied human uses in different magnitudes.
- The port area of the LAPSSET and its corridor will influence human settlement growth. Human settlement growth will gradually take a metropolitan nature. This implies Planning the towns within the central point of the infrastructure and adjacent ones immediately, with enhanced linkage among them.
- The County has control of additional public land which was revoked by the National Land Commission from private developers. They had irregularly been allocated land parcels in conservation areas that accommodate wildlife, grazing lands, as well as migration channels for wildlife.
- Fraudulent land acquisition and land invasions in the past and at present have led to tension between the settlers and indigenous communities. This has occasioned encroachment on vital fragile ecosystems including wetlands, forests and ranches.
- Beaches and sand dunes have been encroached upon as earlier mentioned by farmers and private developers respectively.
- The County suffers from competition for land arising from increasing population, and location of national development projects within the sensitive fragile ecosystem.

- The County has two main population distribution patterns; concentrated and dispersed. The concentrated, which is almost nucleated, are within the archipelago and to some extent the coastal plain while the dispersed are found within the mainland area of Lamu away from the coastal plain.
- Human settlements in the County lack a proper hierarchy, function and are inadequately serviced (water and sanitation, telecommunication, drainage, solid waste management, power). These are mandatory core urban services upon which the quality of human life is predicated and they greatly support private sector performanc
- Extents of settlements are not properly defined and are also inadequately Planned. This has led to uncoordinated growth, sprawl, and encroachment on accessibility spaces like roads.
- Settlements are inadequately linked spatially both internally and spatially. Internal settlement linkage focuses on local integrated strategic urban Plans with a clear layout. External settlement, on the other hand, focuses on the road hierarchy that provides linkages between the urban settlements and their productive hinterlands or scapes.

ECONOMIC BASE OF LAMU

- Lamu County has a rich natural capital resource base which ranges from terrestrial forest, wildlife, rich agricultural land, beaches and sand dunes, coral stone, sand, limestone, solar, wind, marine mangrove forest, ocean, sea grass, marine parks and other ocean resources.
- There is inadequate skilled human resources in the County (as exhibited by low literacy levels and inadequate technical training opportunities). This inadequacy also represents a constraint in that it exerts pressure on available natural resources and calls for more spending on social services.
- Lamu's economy is basically based on the primary sector (farming, fishing, livestock, mining, tourism, and gathering

- honey from the forest). It represents the first level of resource utilisation and tends to fetch low returns on investments, and worsens when there is an oversupply.
- Diversification of the economy into commercial, service and industrialisation is vital in future.
- The potential of the primary sector to create value and employment has not been fully exploited. Value addition, for instance would go a long way in growing the economy and creating employment in the County.
- Land utilisation should be seen from the economic rationale of optimisation to boost agro industrialisation.
- Inadequate and poor economic infrastructure has affected economic operations of the County (roads, ICT, energy & water & sanitation). The infrastructure necessary for growing the economy is either in bad condition and inadequate, or completely non-existent thereby negatively affecting the economy of Lamu.
- Revenue mobilization in the County is a function of economic vibrancy. The County Government is yet to tap into all potential sources of revenue.
- Central Government allocation is based on national statistics about Lamu that are at times misleading, particularly on population. Ignored in the allocation, are the classified road infrastructures suffering from long periods of neglect.
- Insecurity situation in some parts of the County has affected economic activities and curtailed inflow of investments leading to a decline of tourists visiting the archipelago.

AGRICULTURE & RURAL DEVELOPMENT

 Available arable land is approximately 198,000Ha while only about 70,000Ha of land is utilised for farming. Main crops grown are indicated in the relevant chapter of analysis, the

- quantity over the years and value created. The County can achieve more in terms of production by use of appropriate modern farming methods- (Map of the farming areas).
- The implementation of LAPSSET has the effect of reducing the farming area of the County and hence affecting production volume. There will be need to expand farming into other parts that are currently underutilised but are suitable for farming. However, the implementation of infrastructure project will enhance market access for the farm products.
- The County experiences inadequate agricultural input support (seeds, tools and equipment). Farmers require adequate inputs as indicated to enhance production. Seeds and other inputs have been out of reach due to high costs of inputs unaffordable to some farmers.
- Agricultural support services of research, and dissemination
 by extension staff, provision of storage and marketing are
 vital for enhancement of the performance of the sector.
 Inadequacies in this area of support services have affected
 the performance of the agricultural sector. A positive note
 is that the County has provided tractors to be used for
 cultivation by farmers to enable large scale to medium scale
 farming.
- Conflicts between crop farmers and pastoralists and between crop farmers and wildlife have become common as a result of drought and search for water and pasture. There has been also agricultural expansion into areas of wildlife as well as migration corridors both for wildlife and livestock increasing the chances of conflict.
- There is lack of value chain approach to analysis and improvement of the crop farming sector in order to diversify the County economy. Using the value chain approach implies spatially linking all the sectors that contribute to the performance of farming, harvesting, transportation, storage, manufacturing and processing to distribution and marketing.

LIVESTOCK & RANGE MANAGEMENT

- The County has expansive land for grazing covering areas of swamps, wetlands, and seasonal rivers as well as the Tana Delta area. These happen to be areas where ranches are located as well as livestock migration channels. It closely interacts with wildlife spaces and their migration patterns.
- There is heavy dependence on pasture that grows naturally leading to scarcity at times and hence conflicts.
- LAPSSET infrastructure development is expected to help the
 livestock sub sector in terms of enhancing the market access
 and providing opportunities for value addition. Conversely,
 space for the project will definitely reduce the current
 livestock grazing areas and interfere with livestock
 migration patterns. This requires the attention of the spatial
 Plan to integrate not only the livestock and wildlife
 movement channels but also the County road system.
- It has been observed that livestock mode of production is still too traditional facing lack and inadequate livestock infrastructure (dips and vaccination crushes, grazing and, water facilities). Further, it is still viewed greatly from the prisms of cultural prestige; sentimentally rather than in the economic rationale. This has an impact on the productivity of the sector, and the failure to leverage improved techniques to expand the sector on an industrial scale for export market
- Potential of the sector to create wealth through value chain analysis and spatial Planning has remained underutilised.

FISHING

- The County has an expansive fishing area of the sea (40 traditional fishing grounds and 32 landing sites) and availability of a variety of fish species with potential for improving the economy.
- The volume of fish harvested in the County is low compared to available resources. This is due to inadequate infrastructure for fishing. The infrastructure to grow the

- fishing industry includes research, laboratory testing, vessels used, cold storage chain in fish landing sites, ease of transportation and marketing.
- Fish harvested in most cases is sold in raw form and fish being highly perishable, turns many fishermen into desperate suppliers at the mercy of the buyers. A focus on the whole fish value chain will lead to improved livelihoods of the fishermen and greatly benefit the County.
- There are some unprotected fish landing sites which constrain the operation of the fishermen. These are spread throughout the County and require immediate attention for their protection from the concerned authorities.
- Over the years there is a gap in collaboration between the national Government and the County Government with regard to the policing of the territorial waters of the Country. This has been worsened by inadequate policy focus on the blue pearl as a frontier of wealth creation and opportunity. It has therefore motivated foreigners to encroach on Kenya's territorial waters reducing the quantity of fish available to the fishermen of Lamu.

TOURISM & HERITAGE

- Lamu boasts of rich unique tourism package both terrestrial and marine (wildlife, ox bow lakes, beaches, ocean, marine park, traditional crafts, culture and Heritage). Already referred to as the "complete package", this unique feature is yet to be aggressively marketed as the land mark of Lamu.
- The proposed national development project (resort city, access to Lamu by air, road and railway) will enhance the access to the County and make it easier to market its tourism uniqueness.
- There is encroachment on wildlife spaces and forest through development projects, human settlements and poaching thereby affecting wildlife as an input in tourism. It is however hampered by the tsetse fly menace and insecurity posed by terrorism.

- Current heritage sites are characterised by inadequate maintenance. The qualities of these sites need to be diversified and package appropriately as tourist destination. This calls for partnership between the National Museum of Kenya and the County Government of Lamu.
- Lamu does not benefit from past and current tourism activities (fortified tourism enclave). Investments in tourism are dominated by foreigners who have Planned comprehensively for their visitors from arrival, and transportation into their tourism facilities. This tends to limit the participation of the local people in tourism.

TRADE & COMMERCE

- County has commercial centres where trade activities take
 place with a number of them specialising in provision of
 certain services. They form the nucleus of urbanisation,
 commercial development and industrialisation. It is
 imperative that they be Planned and provided with required
 services to facilitate investments, and accommodate more
 people in a compact manner.
- The County suffers from limited investor knowledge of opportunities due to lack of aggressive marketing and inadequate infrastructure facilities and services. It has culminated into low level of operation of current trade and commercial activities within the County.
- LAPSSET infrastructure development project presents an opportunity to increase the trade and investment capacity of Lamu.

TRANSPORT, INFRASTRUCTURE, FACILITIES, SERVICES & UTILITIES

This sector is the cornerstone of social economic development (both quality of life and creation of wealth) by providing inputs and efficient accessibility to opportunities and services. Emerging Planning issues and opportunities touching on transport, telecommunication, energy, water and sanitation, education, health, security and recreation are summarized below;

TRANSPORT

- Road conditions linking the County to the outside are in bad conditions limiting accessibility and marketing of local produce externally. The same applies to accessing goods externally for use within the County. Air transport is out of reach of the majority while sea transport is limited within the archipelago and not safe and secure for external accessibility.
- County faces unreliable public transport both by sea and land due bad roads and insecurity brought about by terrorism. Roads are in bad conditions due to long periods of neglect and isolation from the main economic development artery of road and railway from Mombasa Port to Kisumu, Eldoret, Busia and Malaba.
- County faces expensive public transport both on sea and land hampering accessibility to opportunities and land. Sea transport is not well organised due to lack of Planned terminal facilities at the jetties within the County.
- Poor public safety of sea transport where small sea vessels
 are utilised to ply high and rough water routes to transport
 goods, services, and people (Kiunga, Pate, Ndau, Faza, Pata,
 Manda, Shella, Matondoni, Kiwayu, Mokowe, etc). It is
 worsened by untrained sea vessel personnel, without
 insurance and warning equipment. It is also characterised
 by inadequate monitoring and patrol for safety by the
 maritime authority.
- There is lack of enforcement of maritime regulations about safe sea transport and requirements in the County. Safety and security of sea transport is therefore compromised by the current operations of sea transport.
- On land, the LAPSSET project constitutes a key spatial organising element of the County dividing it into almost two equal parts of East and West. It will exert influence on the land use along it and there is need to link it to the rest of the County at various junctions by proper integration with existing road system of the County.

FNFRGY

- Currently the County has a variety of energy sources both for domestic, commercial and industrial use. These are gas, diesel, kerosene, charcoal, wood, and electricity. Utilisation of the above is according to one's social economic status.
 Some of the energy sources are not sustainable like wood and charcoal.
- It has great potential of tapping into renewable energy such as solar and wind. This is supported by wind speeds in some parts of the County as well as solar irradiation intensity. It is a better alternative to the coal power Plant.
- Only a small part of the County is served by electricity.

WATER & SANITATION

- Available sources of fresh water are experiencing pressure of over utilisation, inadequacy due land use practices while others contain water that is unsafe for human use.
- County is experiencing rising demand for water occasioned by rapid population growth (of people and animals) and urbanisation. There is urgent need to identify a variety of sources of fresh water supply to the people of Lamu.
- No human settlement in Lamu has a Planned sewer system hence current approaches of sceptic tanks are unsustainable for compact urban settlements and for increased population. Currently within the archipelago domestic waste water runs in open drains, and is directed into the sea.
- County has a best practice of solid waste separation but lack solid waste value chain to properly manage the solid waste in a modern way (green techniques or approaches). This includes transfer stations, recycling; organic waste centres and final land fill area.

EDUCATION

 The County has adequate school facilities corresponding to the settlement pattern or concentration but faces the

- challenge of getting the pupils to schools and retaining them to the end of the education cycle. Some schools are inaccessible, like in some parts of Kiunga, and Basuba wards.
- County has adequate secondary facilities which are underutilised due to inadequate enrolment for secondary education.
- Low levels of secondary school attainment are widespread
 in Lamu partly due to their unequal distribution within the
 County. It is also difficult for transition from primary to
 secondary schools and to retain the students in school up to
 the end of the education cycle. Young people are affected
 by drugs, easy money from tourism in the past and cultural
 practices affecting the girl child.
- Unequal access to education among boys and girls in favour of the boys' due to cultural practices has led to high illiteracy among the ladies and unequal participation in the labour market place.
- Performance of the learners in national examinations both in primary and secondary schools is poor due to lack of discipline on the part of the students, lack of parental follow up and inadequate school administration.
- There are fewer tertiary institutions in the County for skills training and development, while the available ones have deteriorated.
- Understaffing in some of the schools denies the learners the attention and guidance required from the teacher.
- In future, the County will face increasing demand for both primary and secondary education as population grows.
 There is need for Planning for future education needs in view of increasing population needs from population projections.

 The menace of drug addiction is affecting the education of the boy child and young men in the County leading to a loss of labour and productivity besides spread of HIV/ AIDS.

HEALTH

- County has made attempts to distribute various health facilities across the County but the people still face accessibility problem to the health facilities in terms of distance and affordability of the services.
- Hierarchy of the facilities and distribution has not been well ordered to facilitate proper referrals in accordance with complexity of the medical issue.
- County is unable to retain qualified health personnel (both doctors and nurses) within the County and in many cases falling below the required threshold as per the WHO. .
- Mortality rates are high within Lamu leading to low life expectancy in the County compared to the national one.

TELECOMMUNICATION

Poor network availability in most parts of the County by the major service provider's hampers connectivity and information flow internally and externally.

RECREATION

County is characterised by inadequate and lack of recreational spaces. Within the archipelago there are some public open spaces, and on the beaches. In the rest of the County apart from educational facilities and show ground, there are no public recreation spaces for the residents of the County.

SECURITY SERVICES

 Security provision is under the central government through the office of the Ministries of internal security and defence.
 The County Government would therefore be not the best placed to curb insecurity matters in the region

- Insecurity in the County is more in the areas that are less accessible occasioned by poor road conditions and network, forest thickets and intermittent development areas
- Areas of resource competition like pasture and water also form the areas of potential livelihood conflicts and threat to security

CEMETERY

- Cemeteries available in Lamu County are in areas occupied by the people of Islamic faith while those of the Christian faith have no cemetery
- The county faces the problem of providing adequate cemetery facilities where they are provided, and currently where they are lacking

INSTITUTIONS AND GOVERNANCE

- Governance is crucial for the success of formulation of County Spatial Plans, implementation and for favourable intended outcomes. It functions in a milieu of layers guided by national values and principles; constitutionally established, and legitimacy of performance in addressing Planning and development challenges. In it is the value of guardian of and on behalf, direction, cohesion, and motivation. Emerging challenges that impact on Planning;
- There exists some conflict between autonomy of County Governments to articulate the needs and rights of the citizens within the County in relation to the domineering approach of the central Government demands and state corporations. In certain instances, the local community are at the receiving end of decisions made without their participation, and adequate advocacy for them by their guardians.
- The institutional and governance realm also faces the challenge of inadequate collaboration and coordination of development efforts among state actors leading either to conflict or duplication of efforts. For instance, County

Government, central Government, state corporations, and state actors)

- There is lack of sector wide approach to the implementation
 of development project, leading to sub optimal outcomes of
 development efforts. This is due to lack of or inadequate
 sectoral coordination and collaboration among
 departments and sectors within the County. It warrants the
 formulation of a County Strategic Plan to oversee the
 implementation of the County Spatial Plan.
- Within the County Government, there is inadequate understanding of what the County Spatial Plan is, what it entails, and the value it creates for the executive and the ward representatives. It represents a negotiated agreement on the solution of the people's problems by the people and the location of those problems thereby empowering everyone.
- Currently the County has inadequate capacity in all forms to implement the spatial Plan across the sectors (financial, technical officers, office requirements, vehicles). Each sector is expected to translate the strategies, policies, and projects of the spatial Plan into a sectoral Plan that guides its operations.
- Planning capacity within the County is weak to oversee both
 County Spatial Planning and formulation of integrated
 urban development Plans envisaged in the County Spatial
 Plan for all the wards, sub County towns, other emerging
 towns besides development control. Capacity in the land
 and physical Planning office urgently requires strengthening
 broadly to tackle the land use Planning and development
 requirement in a timely manner.

CHAPTER 3: THE SECTORAL PERSPECTIVES

NATURAL RESOURCES; BIODIVERSITY AND ENVIRONMENTAL CONSERVATION

Under this section, the CSP endeavours to promote the conservation and protection of ecologically sensitive bio-diversity since this form the main spatial organising element of the Lamu County. It does imply that only developments that are environmentally friendly will be allowed in the County of Lamu. Some of the objectives under this section are discussed below:

- Empower the people of Lamu to utilise the Natural capital sustainably to meet their diverse needs.
- Reclaim and rehabilitate ecologically sensitive areas that have been lost
- Establish and empower existing Natural capital community groups to protect and conserve natural capital in their own area of jurisdiction

strategies

- Protect and conserve the demarcated natural capital areas in the County spatial plan
- Reconciliation of all development activities on both land and sea with expected widespread impacts on natural capital in the County
- Community awareness programmes on all projects and their impact on the natural capital in their own County and
- Establish sustainable community initiatives of utilisation of natural capital
- Promote community awareness campaigns of the state of the current natural capital base use practices and its consequences now and for posterity

- Establish collaborative mechanisms among the stakeholders with the Community to protect and conserve demarcated natural capital areas
- Establish collaborative mechanism in form of county pacts to monitor common resource use across county borders
- Central and County Governments to establish measures of improving security in the County to enable effective protection of natural capital and its utilisation
- All development projects to be subject to plan guidelines and natural capital assessment criterion and participation of the local community
- Fully utilise the tourism potential of the County based on the triple package integrated with the community to bolster conservation efforts
- Natural capital resource plans and guidelines for natural capital will be prepared for detailed implementation of the plan
- National government and the government of Somalia, and others to initiate mechanisms of conserving and sustainable use of natural capital

The environmental aspects are later divided into terrestrial & marine aspects and are discussed below:

TERRESTRIAL

Forests

Lamu's gazetted forest areas cover 37.5% of the total County land surface area. The ecosystems are habitat to monkeys, baboons, buffalos, wild pigs, elephants, hippos, snakes, birds, butterflies and the rare rumped back elephant shrew (a rare and endangered mammal). The forest is being harvested for non-commercial activities on an area of 280 km² within Boni/Dodori, Lungi, Pandanguo, Witu, Kipini Forest and Lake Kenyatta buffer zone area. The aspirations of the CSP on this sector are discussed below:

a) Objective

To promote sustainable conservation of forests and forest resources

b) Issues

- Illegal land allocation and encroachment on forest land
- Possibility of higher instances of insecurity in the forested areas
- · Unsustainable harvesting of mangrove forests in particular
- Unexplored potential of forest areas including the capacity to carbon trade
- Human-Wildlife conflicts are more rampant in forest areas
- Etc

c) Policies

- Establish suitable community based mechanisms for resolution of human-wildlife conflicts and put in place a framework for mitigation of the effects of wildlife menace.
- Introduce awareness to general public to protect and enhance biodiversity.
- Introduce community benefits sharing mechanisms for conservation and utilization of the natural resources.
- County Government to control encroachment on natural resource areas by proposing buffer zones or other integrative mechanisms in their management

d) Actions

- Revocation of titles under forested areas
- Develop a comprehensive natural resource inventory and intensify research programmes focusing on specific aspects of the environment: for example, water catchment, biodiversity, renewable energy, etc.
- Conduct community awareness programmes to enrich civil awareness on environmental matters
- Conduct a survey of all Forests ecosystems
- The gazzetement of all surveyed forests as protected areas

Parks & Wildlife

Wildlife assets include the African buffalo, topi, giraffes, zebras and a variety of bird species. Kipini provisional forest reserve is both a conservancy and a wildlife corridor. It was formerly known as the Nairobi ranch and measures 220km² shared between Tana River and Lamu Counties but it's managed from Lamu County with 70% of the forest in Lamu.

a) Objective

To promote wildlife tourism in Lamu County

b) Issues

- · Insecurity and wildlife poaching
- Poor infrastructure development including hotel failites and good network of roads in areas deemed as wildlife hotspots
- High prevalence of Human wildlife conflicts along wildlife corridors

c) Policies

- Ensure there is adequate wildlife protection and mitigate human wildlife conflicts
- Enhance infrastructure development to improve access to the touristic rich areas
- Promote wildlife conservation in the County

d) Actions

- Establishment of hotel facilities and eco lodges in identified areas of wildlife conservancy
- Employment of more KWS officers in protected areas under their mandate
- Promote local benefit sharing mechanisms with local communities in areas where wildlife conservancies fall
- Fencing of wildlife protected areas

Wetland & Swamp Areas

Lamu has various swamps from which the majority of the rivers/streams that flow through the County drain into or from. These wetlands and swamp areas are mostly dominated on the area in the south-western side of the County referred the punctured scapes in the land use concepts discussed elsewhere in

this report. These include the fresh water marshes of Ziwa Roka, Ziwa Gambi, Ziwa Kiboko, and Ziwa Kambe among others.

a) Objective

To identify, survey, document and ensure that all the wetlands and swamp areas are protected and conserved.

b) Issues

The major issue around this is the rampant encroachment of the wetlands for farming activities and human settlement

c) Policies

- Promote legal protection and conservation of the wetland resources for environmental posterity
- Enhance drainage pollution control using appropriate cost effective and efficient technologies and urban water management to conserve resources and prevent entry of ground water and surface water resources.

d) Actions

- Conduct surveys for Ziwa la Gorrji, Ziwa la Kiboko, Ziwa la Taa, Ziwa la Kiboko, Ziwa la Sendemke, Ziwa la Hindiwa and Ziwa la Shalu wetlands etc
- Revoke all irregularly acquired land titles and allotments within Ziwa la Gorrji, Ziwa la Kiboko, Ziwa la Taa, Ziwa la Kiboko, Ziwa la Sendemke, Ziwa la Hindiwa, Ziwa la Shalu wetlands wetlands and revert the land to Lamu County Government
- Regulate access and activities within Ziwa la Gorrji, Ziwa la Kiboko, Ziwa la Taa, Ziwa la Kiboko, Ziwa la Sendemke, Ziwa la Hindiwa, Ziwa la Shalu wetlands by proposing land use buffer zones around the wetlands

Mangrove forests

The mangroves of Lamu County cover approximately 54,000Ha, equivalent to 90% of the national mangrove coverage in Kenya. Nine species of mangroves are found in Lamu i.e. Sonneratia alba (Mlilana), Rhizophora mucronata (Mkoko), Bruguiera gymnorrhiza (Muia), Ceriops tagal (Mkandaa), Avicennia marina (Mchu), Xylocarpus granatum (Mkomafi), Xylocarpus moluccensis

(Mkomafi dume), Lumnitzera racemosa (Kikandaa), and Heritiera littoralis (Mkungu).

Mangroves of Lamu County are classified into five management blocks namely; Northern Swamps, Pate Island Swamps, North Central Swamps, Southern Swamps, Mongoni and Dodori Creek Swamps. The Northern Central Swamps are within the Kiunga Marine National Reserve (KMNR) and are dominated by pure stands of Rhizophora which are relatively pristine. The average stand density and volume is 2,225 stems/ha and 382.8 m3/ha respectively. In terms of forest structure and productivity, the most complex mangroves in Lamu occur in the KNMR; particularly at Mambore and Rubu.

a) Objective

To promote sustainable conservation of mangrove forests and corals as part of the County's natural resource assets

b) Issues

- Unsustainable harvesting of the mangrove forests
- Encroachment on the forest areas

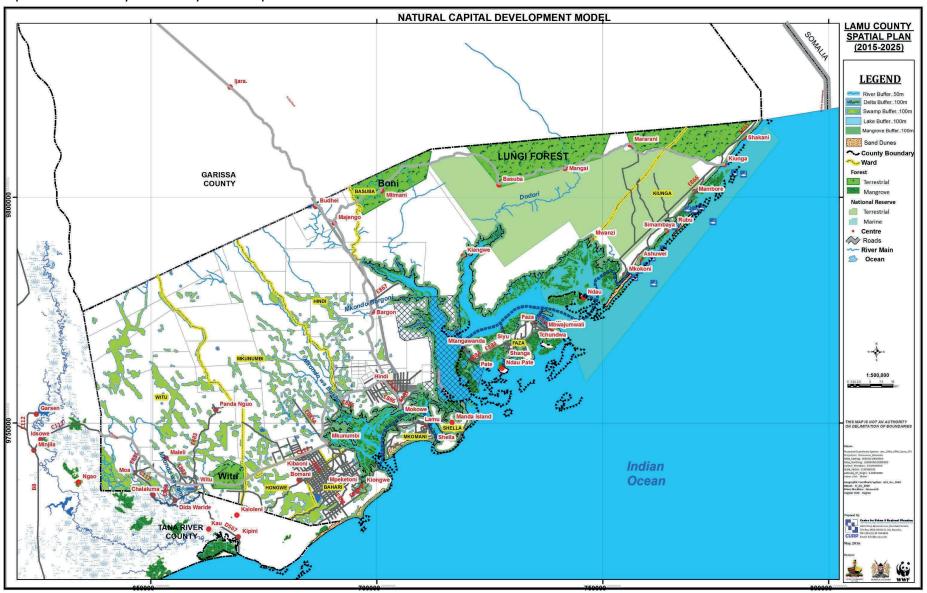
c) Policies

- Ensure re-afforestation programmes are initiated in the mangrove ring areas
- Ensure there is protection and conservation of the mangrove forests
- · Promote sustainable harvesting

d) Action

- Determine the actual acreage of land under mangrove by surveying and formerly protecting them through gazettment
- Provide a buffer of atleast 100 metres around the edge of the mangrove rings from the measured from the highest watermark
- · Re-afforestation of cleared mangrove trees
- Prepare Environmental Management Plans for the mangrove forests
- Carry out public sensitization programmes to increase civil awareness necessary conservation purposes

Map 3: The Environmentally Sensitive Ecosystems Development Model



TRANSPORT & ACCESSIBILITY

ROAD TRANSPORT

The development of road networks has economic, social and political functions in the social economic development process. This Plan ultimately recognized the viability of good and quality road networks in enhancing the competitiveness of the county to attract business, investments and inclusiveness.

a) Objective

- To improve the road network to enhance accessibility and open up poorly served areas of the County.
- To have a navigable road system that is well linked and in a good condition that promotes public transport within the County.

b) Issues

Road network: It was evident that there was a good network of roads linking various human settlements within Lamu County. Specifically, roads in Witu; Bahari; Faza; Hongwe; Mkunumbi; and Hindi wards are well laid out in a good connected network to enhance linkage in the various human settlements in the wards. Inspite of this, the roads are in a deplorable condition that often limits accessibility to those areas. Other wards such as Mkomani; Basuba; and Kiunga have a poor road linkage and their accessibility by road is highly limited.

Road Size(s): Lamu as a County still hold tremendous advantage for road infrastructure expansion as most of the roads are not encroached. There is enough space for road expansion on need for all roads based on their respective classifications and the current standards as per the Planning Handbook and other legislations.

Road Conditions: Across the County, all roads are unpaved and in a deplorable state which makes travel time increase by 300% compared to the normal time it would take to reach a destination. The main Class C road from Mokowe to Witu is in a poor condition and often floods; large potholes rendering the road impassable by use of small vehicles. This is the main economic corridor of the

County and needs the most immediate intervention to improve its standards if economic potential of Lamu is to be realized.

Other Class D roads connecting to Mpeketoni from Mkunumbi; and Kibaoni consecutively and to Bodhei from Hindi are equally in poor states. These are agricultural rich areas and serves as the County's food basket while the surplus produce is exported to other Counties including Nairobi. Improving the road standards connecting to these regions will enhance accessibility and efficiency in transport to promote the market reach.

The roads in Lamu County generally link Centres and areas; or Counties of high importance and needs to be improved to Bitumen; and or Tarmac standard gradually over time to realize the maximum economic potential of the County.

Public Transport: It was evident that most residents of Basuba; Kiunga; Witu; Hindi wards have limited means of public transport by road. The economic losses; exposure to current world affairs; untapped biodiversity potentials in these regions caused by this gap was highly felt during the interactions with the residents from the wards. The need to provide viable means of public transport by road was highly emphasized by these residents as a way of linking them up with the rest of the Lamu County; Country; and the world in general.

The LAPPSET Project: The project is still set to take off. It will serve great connectivity and opening up of the Lamu County. It will consist of a road highway; a rail connection; and a pipeline. Both the rail and highway will serve great connectivity importance for the County and will in the long run open up the County to major mutual economical gains from trade with the rest of the Country; regionally; and the rest of the world.

c) Policies

- Ensure every ward has at least 30kilometers of tarmac connecting service Centres in the next 10 years.
- Ensure the minimum standard for all roads within the County is gravel whether classified; or unclassified and should be maintained quarterly

Annex FR6

- Ensure linkage and opening up of areas that are less linked to the rest of the County
- Ensure every ward centre is connected by a 30 metre road except where they are connected already by a higher class of road
- Integrate LAPSSET road and railway infrastructure with the internal road network to facilitate social economic development
- Ensure concerned road authorities endeavor to include non-motorized transport facilities on all roads to ensure equity and social justice
- Formally demarcate and survey all roads within the County
- Ensure that all wards in the mainland are served by at least four 14-seater public transport vehicles owned by individuals facilitated by the County Government of Lamu through joint Public-Private Partnership initiatives.
- The County Government to liaise with the National Government Institutions in charge of roads to formally classify un-classified roads that currently link to various human settlements

d) Actions

- Tarmacking of the 114 kilometers Garsen-Witu-Mokowe road (C112) – (Mokowe-Nyongoro section) shown below. the proposal is in line with a current National Government Proposal.
- Tarmacking of the Kibaoni-Mpeketoni road; Mkunumbi-Mpeketoni road; Hindi-Bargon road; Majengo-Kiunga; Witu-Moa road; and Faza-Pate-Siyu-Mtangawanda road

Hindi-Majengo Road



Source: CURP, 2016

- Improving the Mpeketoni-Kiongwe road to Gravel Standard in the next 5years and to tarmac in the next 10years
- Improving Mkokoni-Kiunga road; Witu-Kipini; Witu-Pandaguo; Witu-Maleli roads to gravel standards

A section of the Witu-Kipini Road



Source: CURP, 2016

- Classification of Witu-Moa-Chalaluma road
- The County Government to create an enabling environment to facilitate the purchase of at least sixteen 14-seater matatus for public transport by private individuals to offer viable

- options of public transport for residents living in Bargon; Majengo; Milimani; Mangai; Kiunga; Moa; Pandaguo; Kipini; Chalaluma; and Basuba.
- Provision of a 12-meter cabral/bitumen road to link Lamu town; Matondoni village; and Kipungani village; and another road to act as buffer from the Agricultural land and the sand dunes within the island on the southern end.

WATER TRANSPORT

a) Objective

To promote and improve public water transport in the County

b) Issue

Public Transport: residents of Faza; Kiunga and Basuba wards are highly limited on public transport means since their most viable option of transport currently is by water. It was however noted that there are no dedicated public transport boats and the ones available are very few; old; and slow. The faster boats that offer public transport for the residents as an alternative are the speed boats that ferry 'miraa' to Kiunga for transit to Somalia. More often, the available means of water transport is either not safe; convenient; or time efficient. It was evident that there was need to provide a viable solution for safe; convenient; and faster public transport by water for the residents of Kiunga; Basuba; and Faza wards.

A boat ride from Mokowe to Lamu Island



Public Jetties: The County Government has made commendable efforts to construct jetties for ease of public transport in most

human settlement areas within the County. In particular, is the jetty in Lamu; Matondoni; Kizingitini; Mokowe; Manda; Mtangawanda among others. These jetties act as the terminal facilities where public transport boats dock awaiting passengers. Provision and construction of more jetties on connected sea spaces need to be assessed and proposed to offer more viable and connected public water transport in the County.

KPA Jetty



Source: CURP, 2016

Sustainability of public water Transport on Lamu-Faza route: On the onset of the LAPPSET project, the port area will cut across the deep waters of Mtangawanda rendering sustainability of public transport using this route from Lamu to Faza in uncertainty. This is because this section will be now controlled owing to the economic significance against the security situation once the LAPPSET port area is fully operational.

c) Policies

- Law requiring that all boat captains; and/or their assistants are in possession of first aid certificates; and all passenger boats are fitted with basic first aid kits; and life saver jackets
- Ensure that boats smaller than 24ft do not to ply the high waters of Kiunga and Mtangawanda section while carrying passengers
- Ensure that all settlements accessed by sea are served by convenient and efficient means of public water transport provided by the County Government.

- Ensure that all public transport boats are covered by an insurance policy in the event of a disaster.
- Ensure that the docking facilities for the public transport boats are well secured and established
- Ensure that an alternative route is identified to connect Pate and Amu islands in the event that the LAPSSET project curtails movement around the Port area
- Ensure connectivity of the Lamu Port and other ports in East Africa to enhance cruise Tourism activities in the regions

d) Actions

- The County Government to facilitate the purchase of at least 10 speed boats not less than 32ft with a capacity of at least 28 passengers to provide public transport to residents of Kiunga; Basuba; and Faza wards
- First aid training lessons to be made mandatory to all boat captains and assistants who ferry passengers to either Manda jetty; Mokowe jetty; Matondoni; Faza; Mtangawanda; Kiunga or any other jetty
- Establishment of a boat marina in Lamu Island Old Town of Amu
- Securing of water linkage route from Mtangawanda jetty to a creek in Basuba Ward in the mainland
- Formation of a boat owners Sacco to necessitate issuance of an insurance policy.
- Construction of a sea walls at Siyu Village, Mbwajumwali, and Kiangwi(e)
- Reconstruction of Siyu foot bridge connecting to the Siyu Fort which is currently being restored under a County Government project.



A section of the bridge



The sea wall at Siyu village



Source: CURP, 2016

AIR TRANSPORT

Annex FR6

a) Objective

- To enhance linkage of Lamu County through air transport
- To promote air transport as an efficient means of produce delivery

b) Issues

Current Condition of Airstrip(s)/Airport: Manda airstrip, with recent efforts to upgrade it to an airport is the biggest and serves as the County's main linkage regionally; and to the rest of the world through air transport. The airstrip as it is, is small with a low number of passenger flights flying into Lamu. There are Plans proposed under the LAPPSET project to construct an airport in Mkunumbi. The proposed airport site has far reaching economic benefits owing to its locational setting. It is proposed in a location of rich agricultural value where farmers undergo huge losses every year due to the perishability of their products that miss on time to get to the market. Additionally, there is enough land in this area for expansion of the Airport on need considering it is within the mainland of Lamu County.

The proposed location in Mkunumbi is the most viable location considering it will be serving the residents of Lamu County and more specifically the Agriculturally rich Bahari; Hongwe; Mkunumbi; Hindi wards; and the LAPPSET port activities at the same time. It was also evident that the residents of Mkunumbi; Hongwe; Bahari; and Hindi wards are highly receptive of the project and welcome it.

c) Policies

- Ensure that the County is served by at least 1 Airport and at least 2 functional Airstrips
- Promote the use of air transport as the alternative means to export farm/livestock products
- Publicize and advertise the use of air transport to Lamu as a way of attracting and promoting both domestic; and foreign tourism

d) Actions

- Upgrading of Mkunumbi airstrip to an Airport in the next 5years in anticipation of the LAPPSET project and owing to its locational advantage; and the availability of land for expansion on need
- Maintain and expand Manda Airstrip as the second biggest commercial Airstrip to accommodate a larger number of passenger flights.
- Upgrade Faza Airstrip to serve Pate Island

RAIL TRANSPORT

a) Objective

To have a well-established rail system that links Lamu County to the rest of the Country; and East African Region as a whole

b) Issues

Rail Network: Lamu County is not served by any rail network. It is anticipated that the proposed LAPPSET project will introduce a rail connectivity to Lamu. It was noted that there is need for a rail connection of Lamu to the existing network at Mombasa owing to the huge traffic of people visiting; and/or anticipated to visit Lamu in the near future. Additionally, the tourism; agriculture & Livestock potentials of Lamu need to be linked by rail to other counties; and regionally to expand the current market structure and as a means of an efficient means of transport.

c) Policies

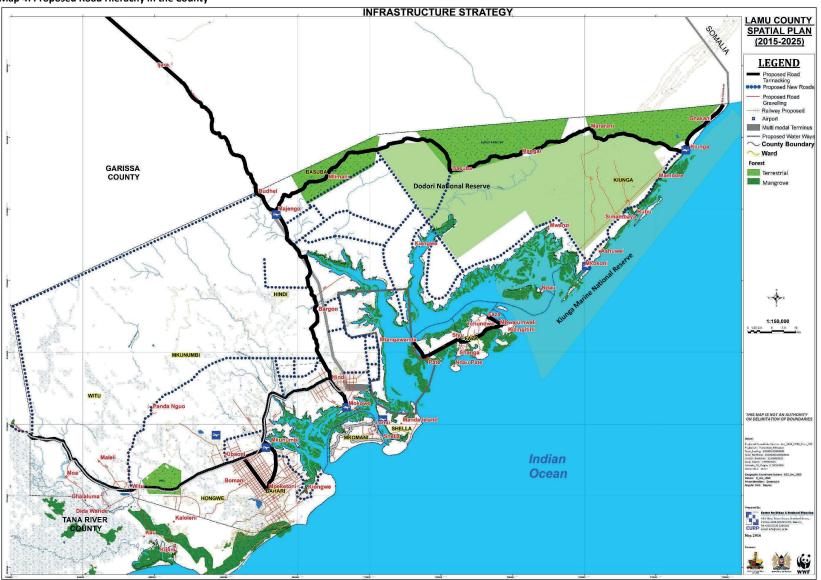
- Ensure there is a rail connection of Lamu and the rest of the Country; and East Africa region
- Prepare a Resettlement Action Plan to offer guidelines on resettlement of Project Affected Persons in the event that a rail route is identified.
- To promote industrial activities within the County to emphasize the need for the rail network

d) Actions

 To identify; survey; and demarcate a best route alternative for the rail system to connect to the existing Mombasa rail network

- To liaise with the national Government to ensure the construction of the rail network in the next 10years
- To identify and delineate land in all the wards across the County for industrial establishments in the next 10 years based on comparative strength as follows:
 - Witu Ward Slaughter House and Value Addition industry in meat processing
 - Bahari; Hongwe; Mkunumbi Wards Agro processing industries and warehouses
 - Hindi Ward The LAPPSET project
 - Mkomani Ward Craftsmanship Industries

Map 4: Proposed Road Hierachy in the County



LAND & HUMAN SETTLEMENTS

The County Government of Lamu is custodian of public land from recently revoked ranches irregularly allocated to private developers. Lack of land tenure is a common problem in the County as majority of Lamu residents have neither title deeds nor letters of allotment to the land they live or draw their livelihoods from, this threatens Lamu's biodiversity and local livelihoods.

a) Objectives

- Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (Sustainable Development Goal number 15)
- Reduce inequality within and among countries (Sustainable Development Goal number 10)
- Efficient, sustainable and equitable use of land for prosperity and posterity (Kenya National Land Policy)
- To ensure security of tenure to residents and investors in Lamu County

b) Issues

Undocumented indingenous land claims

Demographic estimates place the indigenous title ownership in Lamu between 10-20% depending on the area of settlement. It has been found that most locals sell their land due to the high poverty levels and expensive land adjudication process that led the impoverished owners to relinquish their lands. This situation is causing ethnic tensions in the region since indigenous populations remain insecure on ancestral lands and access to natural resources

Blatant Encroachment on Land

Plots in gazetted water towers and catchment areas, such as the Shela sand dunes where wells for the town are located have been encroached by numerous individuals and companies laying claims to ownership of the land. (Save Lamu)

Encroachment into recognised grazing corridors for the pastoralist communities has created conflict between different communities. Some have illegally subdivided the ranches and sold the land later to outside parties who have opted to develop the areas.

Fish landing sites have additionally been grabbed and thus threatened livelihoods and biodiversity in the area, especially turtle breeding grounds

Illegal acquisition of land

Reclaimed lands in the Wiyoni area of Lamu Island created from dredging operations and meant for public utility have also been encroached by private investors and squatters who have already begun developing the area.

Hotel owners on Kiwayu Island who have irregular/fraudulent title deeds on the land have developed resorts on the island, which is a National Marine Reserve. This prejudice has developed mistrust amongst community and natural resource agencies and also encouraged locals to sell land rather than conserve their resources as there is no direct observed to retaining the land

Huge swathes of land held for speculative purposes

Prevalence of squatter problems

There is continual degradation of Boni and Witu Forests as the region is invaded by recent immigrants under the false pretense of being squatters so as to benefit from the existing settlement scheme program

Increase Land Bank for the County

Title deeds of 12 parcels of land totaling 353,770 acres (143,227 hectares) were cancelled and the land returned to Lamu County for public use. The County Government can now best manage and utilize thses lands for the sustainable development of Lamu County

c) Policies

 Provide security of land tenure to indigenous people of Lamu in areas they live and draw their livelihoods

- Require title deeds of land both for agriculture and ranching are to be issued they should be leasehold not freehold.
- Conduct an inventory of land ownership to determine land availability and identify illegal land acquisition in Lamu County,
- · Revocation of titles illegally or irregularly issued
- Raising awareness among local communities on their land rights and mechanisms of securing their land
- Prepare checks and balances to prevent irregular and illegal land sales as well as on illegal sale of letters of allotment.
- Allow indigenous communities land access rights for sustainable traditional livelihoods within formally protected areas
- Provide direct support on a trial basis with formalization of land rights for selected communities.
- Advocate for devolving powers over public land under control of the National Government to the Lamu County Government.

d) Actions

- Resettle indigenous squatters and other landless Lamu citizens in settlement schemes and allocate them title deeds.
- Provide community titles to areas where communities draw their livelihood and live
- Require title deeds of land both for agriculture and ranching are to be issued they should be leasehold not freehold.
- Conduct an inventory of land ownership to determine land availability and identify illegal land acquisition in Lamu County,
- · Revocation of titles illegally or irregularly issued
- Raising awareness among local communities on their land rights and mechanisms of securing their land
- Prepare checks and balances to prevent irregular and illegal land sales as well as on illegal sale of letters of allotment.
- Provide recognized community land access and utilization within formally protected areas to indigenous communities for sustainable traditional livelihoods

- Formalization of land rights for selected communities who may suffered from historical land injustices
- NLC to set up framework to devolve powers over public land under control of the National Government to the Lamu County Government.

HUMAN SETTLEMENT

Human settlement strategy reflects a concentration of people, their activities and influence on the natural capital or environment. Human settlements alter significantly the natural environment in which they are located, and draw upon various services and products from the environment besides releasing by products of human activities to the environment. The natural environment too influences the human settlement in terms of centrality and topographical characteristics. Its critical functions or roles are to reduce pressure on land and fragile ecosystems, facilitate efficient delivery of services, enhance competitiveness of urban areas for economic opportunities, and reduce costs of production. Other roles include commerce, administration, industry, education, health, recreation and resort/tourism and entertainment.

This strategy incorporates aspects from a variety of concepts that have been developed earlier. These are; port precincts, archipelago, economic nodes, the gates and economic corridors. In developing the future human settlement strategy for the County, the spatial Plan has taken into consideration the following:

- The previous hierarchy of human settlements (Local, market and Urban Centres)
- The gates of Lamu town emerging from the spatial Plan analysis
- Emerging areas of concentration of human settlements outside the designated hierarchy
- Emergence of devolution that has singled out sub counties and wards as administrative territorial units within the County and being used as territorial units of service delivery
- Implementation of LAPSETT, especially port facilities, town and airport (Port area or precinct)
- Predominance of sensitive biodiversity and natural environment of the County

- Availing mandatory services for liveable sustainable human settlements
- Functions to be performed by human settlements and relationship to their resource hinterlands
- Optimum utilisation of land
- · Heritage conservation and Swahili culture
- Distribution of human settlements in line with devolution

DISPERSED AND CONCENTRATION STRATEGY

The above strategy of human settlement has been adopted for the Lamu spatial Plan as strengthened by the support mentioned above. Secondly, it combines the concepts developed in the spatial Plan, administration, emerging pattern of human settlements and the priming decisions o central Government and County Government within a given natural environmental setting. Applying the concept of strategic gates, urban human settlements that form the strategic gates of Lamu containing landmarks and unique welcome to the County are singled out. These urban centres are; Witu, Budhei, Kiunga, Manda, Mkunumbi, and Kizingitini. The size, functions and services required are as explained in the table below. The gates on the other hand provide a dispersal that is distributed in the County as follows: Kiunga, Kizingitini/Faza, Manda, Witu, Mukunumbi and Budhei.

DISTRIBUTED AND CONCENTRATED STRATEGY

Distributed and concentration purely focuses on the administrative components that give us three level hierarchies of human settlements. In addition, it takes note of the other emerging centres within the County that require special attention of Planning and management. These three level hierarchies are: Capital City of the County at Mokowe; Sub-County urban Centres at Amu for Lamu West and Faza Urban Centre for Lamu East; finally, 10 lower centres as ward administrative areas. Concentration is crosscutting among all the human settlements to discourage proliferation of settlements into productive livestock or agricultural zones as well as conservation areas. It also ensures efficient and cost-effective provision of services.

The application of the gates and administration incorporates the following previously designated human settlements; Amu, Witu,

Faza, Mkunumbi, Kiunga, Manda, Kizingitini, and Mokowe. Some areas of concentrated development of people outside the abovementioned areas are; Mkomani, Kiongwe, Pandanguo and Mapenya. Within this strategy, it is expected that around the port area the growth of a metropolitan character will take place in the long term. Metropolis is envisioned to grow within the towns of Hindi, Mkunumbi and Mokowe. It is likely to expand to Bargoni, and Mpeketoni if not properly Planned and contained.

HUMAN SETTLEMENTS REQUIREMENTS IN THE SPATIAL PLAN

- All the urban settlements must be guided by integrated urban strategic Plans
- Proper management systems to be put in place to guide the development of the proposed system of urban centres according to the reviewed Urban Areas and Cities Act
- Adequate palatable water supplies
- Adequate sanitation system
- Liquid water collection system from the settlement
- Proper management of solid waste
- Adequate drainage system
- Availability of energy supply in the urban settlements
- Regulate development to take place within the Planned area to avoid sprawl
- Spatial linkage of the settlements in terms of connection between the centres and between centres and their primary production spaces (terrestrial and marine)
- Adequate appropriate circulation system to open up opportunities and enhance integration
- Human security provision and its maintenance

GUIDELINES

- Human settlements within the Archipelago to grow and maintain the preservation of heritage and culture as an important input for tourism beyond opportunities provided by the sea (Manda, Shella, Ndau, Kizingitini, Pate, Faza etc.)
- Conservation of the biodiversity and marine ecosystem is a necessary requirement for enhancing the natural asset for

economic utilisation both for fishing and tourism as well as other ecosystems services

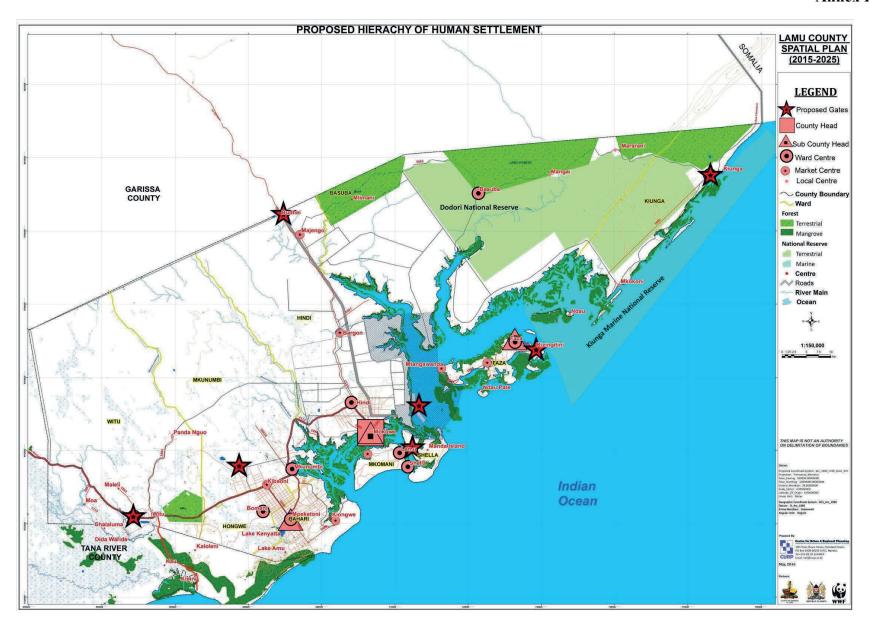
- Core framework of services as mentioned above to be provided by County and stakeholders
- Improvement of security will enable the establishment of ward administrative centre at Kiunga moving it from NDAU and also setting up of the ward administrative centre in Basuba ward
- Growth and development of the human settlement system in the spatial Plan is linked spatially through interdependence related to services and also primary production activities
- Planned connections of the urban centres and markets to economic corridors and avoid future mobility problems especially at junctions
- Centres of Hindi, Mkunumbi, and Mokowe should be connected by well-Planned adequate road network and well linked to the LAPSETT economic corridor which has the potential to grow into a metropolis

Annex FR6

PROPOSED HUMAN SETTLEMENT HIERARCHY

Urban Centres	Resident Population	Catchment Population	Core Functions & Services	Actual urban Centres
Primary Urban Centre	40,000	150,000	Administration (County & Central Government), Level 5 Hospital, Centre of Telecommunication, Centre of Financial Institutions, Primary Commercial Centre, Central National Security Coordination Area, Industrial, Logistics, Small Scale Industrial Parks, Central Park & Hierarchy of Open Spaces, Research & Institutions of Higher Learning, Large Wholesale & Retail, Education, Building & Construction, Professional Services, Main Postal Service Centre	Mokowe,
Secondary Urban Centre	20,000	80,000	Sub County Administration for both County & National Government, Some Gates (Mkunumbi) Fishing Industry (Faza, & Amu), Jetty Facilities, Agro Industrial, Logistics, Level 4 Hospital, Heritage Conservation & Tourism, Parks, Financial Institutions, Secondary Commercial Centres, Micro & Small Scale, Education, Parks, Hotels, Sub County Security, Veterinary & Extension Services, Telecommunication Services, Sub Postal Service Centres	Amu, Faza, Mpeketoni, Mkunumbi ,
Rural Centre	5,000-8000	40,000	Ward Administrative Centres, Input Supply Centres, Agroware House & Collection Centres, Agro-Processing, Commercial Centre, Financial Institutions, Primary Education Coordination, Security, Level 3 Hospital, Maternity Facilities for Mothers, Extension Officers for both Crop & Livestock, Jetty Facilities, Livestock Value addition, Attractive Commercial & Service Facilities, Telecommunication services, Money Transfer, Carpentry & Metal Fabrication, Heritage Conservation and Tourism.	All the ward headquarters that do not have higher functions, and new trends in settlement growth and the Gates (Witu, Kiunga, Hongwe, Kizingitini, Budhei, Manda,
Market Centre	2000	15,000	Trade and Shopping area, Level 2 Health Facility, Telecommunication Services, Jetty Facilities, Money Transfer, Markets for Local Produce, Carpentry, & Metal Fabrication, Local Crafts,	Pate, Matondoni, Siyu, Bargoni, Kiongwe, Mapenya, Mtangawanda
Local Centre	<2000	10,000	Shopping area, markets, Level 1 Health Facilities, Central Meeting Point, Telecommunication Needs, Money Transfers,	Ndau, Mangai, & Mararni, Pandanguo,

Source: CURP 2016



EDUCATION

The County's literacy level is estimated at 70% but this proportion represents the highly-exposed residents of Lamu west Sub County. Literacy levels for Lamu East are estimated to be less than 30%. (keya County Data). Lamu Couty has no tertiary level institutions except four commercial colleges and a youth polytechnic that are under equipped and with poor enrolment. The County's youth economic empowerment lies with acquisition of relevant tertiary level skills (CIDP). The main objectives for this section in the making of this Spatial Plan are:

a) Objectives

- Ensure inclusive and quality education for all and promote lifelong learning (Sustainable Development Goal 4)
- Enhance accessibility and number of Education institutions
- To improve learning resources ensuring effective monitoring and evaluation of the education institutions
- Promote tertiary level institutions in the County

b) Issues

Poor Literacy levels

A total of 33% of Lamu County residents have no formal education. Basuba ward has the highest percentage of residents with no formal education at 59%. This is three times Bahari ward, which has the lowest percentage of residents with no formal education.

A total of 54% of Lamu County residents have a primary level of education only. Hongwe ward has the highest share of residents with a primary level of education only at 65%. This is 25 percentage points above Basuba ward, which has the lowest share of residents with primary level of education only. Hongwe ward is 11 percentage points above the County average.

Poor Transition Rates

Only 13% of Lamu County residents have secondary level of education or above. Bahari ward has the highest share of residents with secondary level of education or above at 20%. This is 19

percentage points above Basuba ward, which has the lowest share of residents with a secondary level of education or above.

Poor Performance in Schools

Lamu County seems to have adequate number of both primary and secondary schools with above average enrolment and retention rates but they have been performing extremely poorly for a very long time. In 2014 KCSE, for instance, there were several A's in Lamu West from candidates in schools like Lamu Boys, Lamu Girls, Mpeketoni Boys and Shella Girls. The story was however different in Lamu East, with the top student only managing to score C plain.

Inadequate Educational Facilities

Most of the schools in Lamu County have inadequate educational facilities such as learning and laboratories. In Lamu East Sub-County only Faza and Kizingitini secondary schools have science laboratories.

Most of the schools do not have adequate facilities for effective education of persons with disability. This has the impeded the access and enrolment for this vulnerable group.

Furthermore, Lamu County does not have a public library to promote effective knowledge and information flow

Inadequate ECDE centers and Trained teachers

Lamu County experiences an un-even distribution of ECD centres and trained teachers especially in Lamu East Sub-County where most of the ECD centres are not well equipped with learning and play resources and most ECD teachers are being paid by parents.

Inadequate Tertiary Level Institutions

Lamu County does not host a University and only has four youth polytechnics that are poorly equipped.

Poverty effect in Schools Performance

The poor performance has been attributed to high poverty levels in Lamu County creating a situation whereby a student maybe willing to go to school but has to endure an empty stomach by doing so. Indeed, it has been noted that the introduction of feeding

programmes in some Lamu schools, resulted in a notable increase in school enrollment

Drug Abuse effect in Schools Performance

The use of illicit drugs among school going children both in primary and secondary schools within Lamu is also a major cause of the poor performance of the County schools. This menace, especially manifested in Lamu East and may be one of the significant exPlanation to the extreme poor educational performance in this sub-County.

Retrogressive Cultural Practices

The backward cultural practices of Female Genital Mutilation (FGM) and early marriages among school girls and have been rife in Lamu County. This is mostly practiced among the indigenous Aweer and Sanye communities who still hold on to traditional cultural and religious beliefs. In some instances, school going girls opt to get married in the belief that their husbands will rescue them from the poverty in their maternal homes.

Furthermore, the traditional indigenous communities of the Aweer and Sanye and some Bajuni do not believe in contemporary education and discourage their school going children from attending schools.

Insecurity

Lack of adequate security has affected the performance of some Lamu County schools. This is especially so in for schools in Basuba, Mangai, Milimani and Mararani which are close to the Kenya-Somalia border. In fact, attackers invaded Mangai primary school and burnt school property including the administration block, mattresses, all the textbooks and the school's solar panel. Indeed, some three public primary schools in Lamu East sub-County had to be closed down indefinitely and teachers redeployed to other schools in the region due to insecurity.

Insecurity of land tenure in most school in the County is also an issue. Some schools in Lamu County have been encroached on by intruders and squatters and most other school land remains unsecured.

c) Policies

- Enhancing access to lower level education facilities across the County
- Improving the capacity of the training institutions for both equipment and personell
- Enhance access to education facilities and school enrollment rates across the County
- Institute measures to improve performance at all levels of school while ensuring higher retention and transition rates
- Enhancing access to tertiary and vocational training institutions in the County to diversify on skill set for County residents
- Institute measures that will eradicate drug abuse among the young people as well as removing cultural biases against the girl child
- Develop more ECDE centres within Lamu East Sub-County;
- Train and employ more ECDE teachers in Lamu;
- Increase access and enrolment for persons with disability;
- Encourage public universities and colleges to set up campuses in the County;
- Ensure effective access to public library services;
- Strengthen teacher supervision and monitoring in schools within Lamu County;
- Create mechanisms for harnessing the varied talents of students

d) Actions

- Develop 180 ECDE centres in Lamu ensuring effective distribution to households in Bargon, Majengo, Mlimani, Mararani, Mangai, Basuba and Kiunga by 2018;
- Lamu County Government to employ 540 ECDE teachers and by 2018;
- Equip all exsiting ECDE Centres with adequate learning and play facilities;
- Develop boarding primary schools in Mararani, Majengo, Bargoni ensuring the schools are friendly to persons with disabilities;

- Provide school feeding programmes in all public primary schools, especially school in Lamu-east Constitutency;
- Public primary and secondary Schools' Boards of Management to ensure they acquire and safeguard titles to their respective school's land and secure the school's perimeter though adequate fencing;
- Develop adequate and secure staff housing for teachers and staff within public Primary and secondary schools in Lamu County,
- Develop prizes, awards, and effective incentives rewarding exemplary performance by teachers, pupils and schools in Lamu County;
- Develop a Secondary school for every primary school in Lamu County ensuring the schools are friendly to persons with disabilities;
- Set up a university majoring in agricultural and Technological development in Majembeni;
- Engage University of Nairobi, Egerton, KU and JKUAT universities encouraging them to open campuses in Lamu County;
- Develop an institute majoring in Maritime and Biodivesity development in Kiunga,
- Set up an Archeological, Culture and Heritage preservation institute in Amu island;
- Develop a Hospitality and Tourism college in Mokowe,
- Set up a Medical practioners training college attached to the Lamu County Hospital in Amu;
- Set up a Teachers training institute in Bargon;
- Develop more youth polytechnics in Bargon, Majengo, Mlimani, Mararani, Kiunga and Witu;
- Revamp and operationalize the existing 4 youth polytechnics by 2018;
- Set up of public libraries in Witu, Mokowe, and Majengo by 2018
- Conduct a survey to determine the existing number of special education pupils/students aimed at recruit special education teachers
- Develop an ICT, youth and Talent growth centre of excellence in Mokowe

HEALTH

Lamu County has a total of forty-four health facilities spread across the County. The County has three hospitals of which one is a County Hospital and two are Sub-County Hospitals; five Health Centres, twenty-four Dispensaries, twelve Medical Clinics and one Nursing Home. The most notable Hospitals are Lamu County Hospital, Faza and Mpeketoni Sub-County Hospitals. The County has thirteen medical officers, six degree nurses and one hundred and sisty six diploma nurses, thirty-six registered clinical officers, one dentists, five pharmacists, three physiotherapists, five nutritionists and one mortuary attendant. The most prevalent Diseases in the County are malaria, respiratory tract infections, skin diseases and HIV/AIDS.

a) Objective

- Ensure healthy lives and promote well-being for all at all ages (Sustainable Development Goal 3);
- To provide an efficient integrated and high quality affordable health care to all citizens. Priority will be given to preventive care at community and household levels, through a de-centralised national health-care system. (Kenya Vision 2030);
- To provide a robust health infrastructure network in Lamu County; and
- To promote wellness and efficient access to effective health services in Lamu.

b) Issues

Inadequate Medical Personnel

The County suffers from inadequate numbers of qualified personnel with only thirteen medical doctors, 24 clinical officers, 94 nurses, 17 public health officers, 5 pharmacists and 30 technical personnel. This create a disparity in doctor to patient ratio of 1:9,000 which is inadequate compared to the one doctor for every 1000 patients recommended by the World Health Organisation

Despite presence of some good hospitals in Lamu County, most qualified medical practioners shun working in Lamu County. This situation has created an unwarranted problematic situation for the County Government responsible for ensuring adequate medical

personnel in Lamu. The lack of adequate personnel is worst experienced in Faza sub-County hospital which provides medical services to nearly 30,000 people on the entire Lamu East sub-County. Furthermore, the theatre at the Faza sub-County hospital has not been operational for years since it was installed in 2009.

A section of Faza Hospital showing idle medical facilities due to lack of medical personnel



Source: Bocha Galaalo, Nation Media Group, December 2014

Inadequate Health Facilities

Lamu County patients suffer from inadequate access to adequate healthcare. The average distance to the nearest health centre in Lamu County is approximately five kilometers. This evaluation considered with the County's poor road infrastructure and limited availability of transport services, means access to proper health care in Lamu County is a major challenge.

Lamu East sub-County has only Faza sub-County hospital, one health centre in Kiunga and eleven dispensaries. Basuba ward has only one dispensary in Mangai whereas Hongwe ward is only served by a Catholic Dispensary. This dire situation in terms of numbers, distribution and access of health care providers in Lamu County is precarious to the welfare of the Lamu people.

Inadequate Disaster Management and Medical Emergency Response Services

Lamu County has no a Disaster prevention and management Plan, services nor adequate medical emergency response services. The County does not have a proper emergency call centre and no adequate services in case of disasters and emergencies. There are inadequate ambulance services which is a threat to adequate response to medical emergencies. There is worsen by the human settlement patterns of some communities living in dispersed clustered villages mostly accessible by through the Indian Ocean. This fact came to life in during 2009 fire disaster in Faza village and since then no adequate measures have been put to ensure acceptable disaster prevention, preparedness and management.

Poor Preventative Health Care Provision

Preventative healthcare is a challenge in Lamu County as most communities live in remote and dispersed settlements that are not adequately accessible. The Dispersed settlements coupled with poor road infrastructure poses a challenge to the provision of preventive healthcare. Furthermore, most of the remote communities undertake rudimentary livelihoods that makes them susceptible to diseases that are otherwise preventable. It is noted, for example, that malaria accounts for 63.3% of illness in the County. Despite the high prevalence rates, only 30% of children under 5 years sleep under treated nets due to inadequate access to these lifesaving mosquito nets. However, there is increased success in immunization programmes and incidence of malnutrition is rare in Lamu County.

Shortage of medical equipment and drugs

Although the County seems to have spread health physical infrastructure throughout most settlements, there are no medical equipment and drugs to sufficiently provide proper medical service. Most of the health care providers are dispensaries and medical clinics without adequate medical equipment and drugs.

Prevalence of drug abuse

Lamu County is drug abuse especially among its youthful population. It is reported that bhang and cocaine are heavily used among the youth in Kizingitini, Majengo Village in Mokowe, Witu Town, Kashmir Village in Lamu Town, Faza, Tchundwa and Mbwajumwal. This situation is a threat to the healthcare of the County especially ase there are no drug users rehabilitation facilities or infrastructure to support drug addicts willing to abandon the vice.

Poor Maternal Healthcare

Lamu County has the highest number of maternal deaths in Kenya according to a Kenya Demographic Health Survey. Most maternal deaths in Lamu County occur due to failure of most mothers to reach health facilities during child birth. It is reported that although most pregnant women, in Lamu County, attend prenatal clinics, over 45 per cent of the women prefer home deliveries assisted by traditional birth attendants. This is especially in Lamu East Sub County, where most women deliver their babies at home without proper care.

Poor access to health facilities during childbirth, especially in case of birth complications is attributed to lack of proper infrastructure, as well as few dispensaries in the County that experience both human resource and crucial medical equipment shortages. It also noted that social and cultural barriers keep some mothers in Lamu County away from health facilities during child birth.

HIV AIDS Prevalence

Lamu County's healthcare is challenged by the HIV and AIDS prevalence in the County. The prevalence rate in the County stands at an average of 3.2% with the male prevalence rate is at 3.7% while for female is at 2.7%. The prevalence is higher in urban settlements as compared to rural areas. This prevalence rate should be reduced to 1% and complemented with complete eradication of mother to child transmission.

There are positive measures being undertaken as in addition to all the County health facilities, there are 13 VCT centres that provide voluntary testing and counseling services. However, there is need to expand VCT and maternity care outreach, train the infected and affected to provide better homecare, mobilize increased community participation and capacity build of health care providers to guarantee effective monitoring and evaluation.

Funding and National Equalisation

Healthcare provision in Lamu is set to b positively impacted by inceresed funding to promote proper healthcare provision in the County. Indeed, the County signed a Memorandum of Understanding with the national Government, in January 2016, and

received KES200 million to upgrade hospitals in the County. This was in line with the National Government's programme of improving medical facilities throughout the Country to ensure Kenyans access better healthcare services. Lamu County Government dedicated KES 100 million to upgrade the Lamu County Hospital to level 5 status from the allocation from the National Government. It further allocated KES 50 million each to Mpeketoni and Faza sub-County hospitals to facilitate their modernization.

Furthermore, the County received medical donations worth KES 250 million from well-wishers in 2014 and has availed more funds to fight HIV leading to more people accessing VCT services, increased uptake of ARV's and increased awareness and reduced mother to child transmission.

The County is also to benefits from equalisation fund receiving KES 186 million annually from 2013 upto the year 2016. This fund is constitutionally set up to ensure provision of basic services including water, roads, health facilities and electricity to its marginalised areas aimed at bringing the quality of those services in those areas to the level generally enjoyed by the rest of the nation.

Lamu County was fully kitted mobile clinic in May, 2016 courtesy of The Beyond Zero campaign. The campaign is aimed at accelerating the implementation of the elimination of new HIV infections among children and promoting maternal, newborn and child health in Kenya. The mobile clinics also serve as immunisation centres for children, besides providing emergency delivery services for mothers. HIV/Aids testing and minor surgical operations are also available at the mobile clinics

c) Policies

- Strengthen the existing hospitals and health care providers to render enhanced services;
- Prepare a Disater Prevention and Managemnet Plan for Lamu County;
- Improving the quality of health service delivery to the highest standards;

- Promotion of partnerships with the private sector in ensuring effective health care providion;
- Providing access to those excluded from health care for financial or other reasons:
- Require all County wards to have effective health service facility;
- Promote preventative healthcare provision;
- Reduce HIV prevalence rate in the County to 1% and ensure complete eradication of mother to child HIV transmission;
- Promote training of medical personnel in the County;
- Create awareness about the dangers and risks of drug abuse and change attitudes towards drugs among the youth;
- Encourage medical colleges to establish themselves in the County in order to absorb local students;
- Collaborate with NGOs and international partners on provision of healthcare facilities and equipment;
- Facilitate the marginalized communities to take up training in health sector;
- Empower locals to provide voluntary services in their localities through a community health program.

d) Actions

- Increase the number of medical personnel in Lamu County by 30% by 2018;
- Increase equipment and facilities in health centres and dispensaries by 20% by 2018;
- Elevate Lamu County Hospital to level 6, referral hospital by 2020;
- Develop Medical training institute in Amu attached to Lamu County Hospital by 2018;
- Upgrade the Mangai Dispensary into a Helath Centre by with a functioning, well equipped Maternity Wing, 2018;
- Upgrade Patte Dispensary to a health care centre with a functioning, well equipped Maternity Wing;
- Upgrade Faza dispensary to a health care centre with a functioning, well equipped Maternity Wing;
- Develop and Improve Health Centre in Mararani, Bargon, Tchudwa, Majengo and Milimani;

- Upgrade Ndau Clinic to a Dispensary with a functioning, well equipped Maternity Wing;
- Develop an emergency call centre in Mokowe by 2018;
- Purchase 3 well equiped mobile marine clinics to serve all villages in Pate, Manda and Amu islands as well as Kiunga and Kiwayuu;
- Purchase 5 Speed boat Ambulances to be stationed in Pate,
 Manda and Amu islands as well as Kiunga and Kiwayuu;
- Mobilizing more funds to expand VCT and maternity care outreach;
- Undertake training of the HIV infected and affected persons on provision of better homecare;
- Undertake programmes to ensure increased community participation and reduction of capacity building on HIV prevalence rate;
- Develop Medical practioner residences in Faza Hospital,
 And all upgraded Health centres in all wards;
- Set up a drug abusers' rehabilitation centre in Hindi town.

WATER AND SANITATION

a) Objective

Water is a huge problem in Lamu County as depicted by the residents during the FGD meetings. Therefore, the main objectives are:

- To have improved access to potable water
- To have improved access to water for wildlife
- To have an integrated Solid & Liquid waste management system
- To have a good system for solid and liquid waste disposal

b) Issues

High Rainfall:

Lamu County receives high rainfall in the rainy season which when tapped can serve the population during the dry seasons.

In Faza ward, this is already being practiced as they use djabias to harvest water. This helps them practice agriculture even during the dry season. They use that water for drinking and cooking purposes when the salinity levels in the wells are too high. The high rainfall is a huge potential for the Country as they are able to practice agriculture which is a major driver of their economy.

Sand dunes:

There are many sand dunes within the County, in Bahari and Shella wards. Sand dunes act as water reservoirs and sieve out salty water. The wetland areas near the sand dunes are the result of this and the water is clean and fresh. There are also other water catchment areas within Hongwe ward. allusion

Water Resources:

There are many water resources including rivers and underground water; for example, Mangai River. There is thus availability of fresh water in such areas that can be used wisely. In Hongwe, Bomani hill is the highest point where a water reservoir can be situated and water supplied to the households through gravity.

Inadequate supply of clean water & high salinity levels:

There is inadequate supply of clean water in many parts of Lamu County including kiunga, bahari, Hindi, Mkunumbi, Hongwe, Kihobe, Mararani and Manda. People rely on shallow wells that have high salinity levels. This poses a major problem for the residents as they have to deal with lack of fresh potable water. There are a few lakes that they can fetch clean water from but even those are under threat; one of the lakes, Lake Amu is already dried up. In areas such as Kizingitini, Hongwe; Faza and Bahari, the problem of high salinity levels in water was highly mentioned.

Encroachment on water catchment areas and wetlands:

The numerous water catchment areas and wetland areas existing in Hindi ward are also under threat. This is because of the encroachment by human beings onto the areas. This leads to depreciating water content and could consequently lead to the wetland areas drying up.

Lake Kenyatta



Sand dunes and a swamp in Bahari



Lake Amu which has completely dried up



Source: CURP, 2016

Annex FR6

Limited Number and capacity of water officers:

Residents in Faza ward expressed that there are no water officers to help them in making wise decisions about the use of water.

No water points for wildlife:

In areas, such as Mkunumbi, there are **no water points for wildlife**. The animals walk long distances looking for water and pasture; they are therefore found in large numbers in Hindi and Witu wards. These are the areas that still have wetland areas.

Lack of an integrated solid & liquid waste management system

The situation of sanitation within Lamu County is wanting as there are several inadequacies in solid/liquid waste disposal management and human waste disposal. There are few to no dumping sites leading to careless dumping of waste anyhow within the County. In Bahari ward, there is no dumping site and inadequate personnel required for the town's cleanliness. The few personnel are unable to maintain cleanliness due to the large size of the town.

There is no sewer system in Mkomani, Bahari and Hindi wards; they therefore have to rely on pit latrines. This poses a health risk as the pit latrines are situated near shallow wells. There is a high chance of the water mixing with waste, which when consumed leads to outbreak of diseases. In Hongwe ward, the main problem on sanitation was that there is no sewage Plant.

c) Policies

- Ensure protection and conservation water catchment/wetland areas to sustain underground water recharge
- Ensure water sustainablility through diversified and better storage and harvesting techniques
- Ensuring a clean environment free of solid and liquid waste degradation
- Diversifying water sources including rain water and the implementation of water recycling where possible

- Educate the local communities on water related issues
- d) Actions
- Preparation of a Water Master Plan for the entire County
- Delineate; survey and register all wetlands & swamps with the County Government and the NLC
- Prepare an integrated solid & liquid waste management plan
- Assess the possibility of damming Mangai River at several points to serve both humans and wildlife
- Establish specific water points for wildlife and livestock in the deliniated wildlife and livestock movement corridors
- Set aside land for solid waste management/ garbage disposal site in all wards
- Construct a water office and increase the number of officers in Faza, Kiunga, Basuba, Hindi, and Witu wards

ENERGY AND COMMUNICATION

a) Objective

- To have good access to communication facilities and good network
- To ensure every household is provided with electricity

b) Issues

Poor network connectivity:

There are telecommunication challenges, that is, poor network connectivity in most parts of the County. The problem is highly experienced Kiunga and Basuba Wards and also parts of Witu and Hindi Wards.

Poor communication is a connotation of lack of development; business activities can barely take place in these areas.

Poor Electricity Connectivity:

Rural electrification from the National Grid already started in many parts of Lamu but many residents have not received the power connection. They therefore rely on generators for electricity and other alternative sources of energy like solar.

Potentials

One of Lamu's strengths is that it is connected to the national grid and the rural electrification programme is already underway. Other than electricity, Lamu County has potential for:

- Wind Energy- The strength of wind received in the area is enough to generate wind power. A proposed project by Kenwinds in Bahari Ward to tap this energy is ongoing.
- Solar Power- The equator passes through Kenya and thus the Country receives sunlight throughout the year with a Direct Normal Irradiation (DNI) of between 2200 – 2350 kWhr/M² annually.

c) Policies

- Ensure that the telecommunication network coverage is accessible from any human settlement area within the County.
- Enhance efficient and fast connection of the power from the National grid line
- Tap into enormous renewable energy opportunities available in the County
- Promotion of public private partnership investments in green energy and less polluting thermal power
- County and KPL Company & network service providers to put in place a power supply/service provision programmes that connects key strategic investment areas of the County
- Ensure supply of affordable diverse energy options at a competitive rate for the economy of Lamu
- Ensure energy wayleave spaces have been demarcated and distributed equally in the County

d) Actions

 Set up service providers network boosters in Bargoni, Chalaluma, Pandanguo, Basuba and Kiunga

SAFETY AND SECURITY

a) Objectives

• To ensure the upscale of security within the County

- To ensure safe means of public water transport
- To ensure disaster preparedness in all parts of the County

b) Issues

Insecurity:

Insecurity was noted to be a huge problem in many Wards including Witu, Kiunga; Basuba; Bahari; Hongwe, Mkomani and Shella. The alshabaab menace make up a huge part of the insecurity problem.

The national Government has continually made efforts to curb this menace by introducing KDF camps in the County and this has really helped the residents. The Insecurity issue in the County is a big threat to the overall growth of the County as it has great impacts on the businesses within the County and cumulatively loss of investor confidence. This has resulted to the County's continued economic losses as opposed to the tremendous economic gains that the County holds.

No police stations and lack of community policing:

The distribution of police stations within the County is skewed with only a few wards having established police stations. Police stations are required so as to have police officers available at all times to maintain law and order.

Where the scarcity of police surveillance is evident, the use of Kenya Police Reservists and community policing is adopted. It was reported that some wards lack both KPR officers or good structures of community policing rendering such areas very insecure for both the residents and the business community.

Safety

Safety can simply be defined as the condition of being protected from harm and the control of recognizable harm in order to reduce risks. Some of the risks in Lamu include incidences of fire, boat accidents, drowning among others.

Lack of disaster preparedness: There lacks measures put in place to prevent fire occurrences. The width of the streets within most nucleated settlements in the archipelago are small and this limits

chances of rescue in case of a fire. It is widely accepted that these setllements have been established for long times along the cultural and heritage values but inspite of all this, measures have to be put in place to ensure preparedness in times of disaster like fire.

Increased incidents of drowning: Many boats do not have life jackets and first aid equipment which can help save lives in case of accidents.

Degraded sea walls: The degraded sea walls allow sea water to the main land which poses a flood risk.

c) Policies

- Improved security within the County to enhance accessibility to most parts of the County to facilitate security operations
- Integrating different security dockets to improve their efficiency in handling security matters
- Institute collaborative measures between security agencies and the local communities
- Ensure safe and reliable public water transport

d) Actions

- The Police Station established at the Port Area to increase the patrols; and surveillance of the area
- The Kenya Maritime Authority to conduct routine surveillance on the waters within the Port Area
- Improvement of security in the villages through addition of KPR officers;
- Improvement of Nyumba Kumi Initiative
- Ensure that every ward is served by a police station
- Better remuneration for KPR officers and integration into the police force
- Construction of sea walls at Siyu; Mbwanjmwali villages

RECREATION AND OPEN SPACES

a) Objective

To have an adequate number of recreation areas and open spaces

b) Issues

Few recreation parks and open spaces:

Lamu County is well endowed by vast and available land but lack recreation parks and other open spaces that add value to urban centres and human settlement areas. They serve as meeting points for residents; relaxation sites and also act as areas where talents can be nurtured.

The old town of Lamu have a very vibrant open space which is used as an active space by the residens for various purposes. The public square is shown below:



Source: CURP, 2016

Lack of resource centres

There was an expressed need by the residents of various wards including Witu; Bahari; Hongwe; Mkunumbi; and Faza to locate and establish various resource centres for youth talent growth in the various Urban Centres within the wards

c) Policies

- Ensure provision of recreation and open spaces to strengthen the social fabric; and add value to land
- Ensure sustainable talent development programmes & facilities to promote the well being of the youth

- Developing a mechanism of facilitating the enjoyment of natural assets available in the county
- Enhancing access to active recreation spaces across the County
- Enhance tapping of youth talent in the County

d) Actions

- Identify and delineate sites for recreation in all wards within the County
- Establish resource Centres including social halls; theatres in all Urban Centres across the County
- Undertake town beautification in Amu, Mpeketoni, Kibaoni, Hindi and Witu
- Development of a stadium in Mokowe
- Set aside land for a playing field in Lamu Island

ECONOMY & LIVELIHOOD DEVELOPMENT OF LAMU PEOPLE

The livelihood strategy of the CSP integrates sectoral perspectives, and the spatial concepts to provide the future direction of the sector. The overall objective of the sector is to:

'Ensure secure enabling environment for sustainable competitive diversified economy'. To achieve the above, the following sub-objectives have to be realized:

- Location of various economic activities including corridors and nodes of development according to their Natural and cultural capital suitability
- Enhancement of skills of the local population to participate in the economy of Lamu by the public and private sector
- Integration of the National infrastructure development project with associated components with current realities and future projections
- Enhanced maximum contribution of the primary sector to the County economy through value chain and value

addition driven by both public and private sector partnerships

- Provision of adequate first class infrastructure through public and private sector initiatives (Roads, railway, airports, Ports, Energy, Water and Sanitation, ICT)
- Adequate provision of security on both sea and land

Key sectors of focus for livelihood development are as indicated below. These sectors are heavily borrowed from the situational analysis, sectoral perspectives, and the spatial concepts.

a) Objective

To ensure a secure enabling economic environment for a sustainable competitive and diversified economy

b) Issues

Rich natural capital resource base of the County

The County is well endowed with natural resources from which various economic activities a rise. Resources are both terrestrial and non-terrestrial (ocean and freshwater). On terrestrial land is classified into categories of varied potential for crop farming, livestock, forest and forestry, wildlife and aquaculture. On water resources, there is underground un surveyed minerals, sea grass, mangroves and a variety of fish species in addition to the waves and currents. Wind and long hours of sunshine create a potential of green energy generation.

Available population of the County (human capital)

Human capital is essential for social economic development from which is derived the market potential, labour force and increase in the number of people. Population if not well harnessed exerts pressure on both natural and financial resources of an area leading to negative consequences. Lamu has a working population of over 50% of the total population and is expected to benefit from the influx of skilled personnel from the rest of the Country due to the implementation of the LAPSSET infrastructure and urban development project. However, Lamu human capital is low skilled and will require investments for its improvement

Planned national development projects (LAPSSET project

The infrastructure and urban development project is set to enhance accessibility of the County and open it up for both national and international investments. There will be the creation of an economic corridor of development and a unique commercial and industrial zone of a resort City. It creates direct employment opportunities, housing, and commercial, besides making Lamu a favourable place for investments. Its potential impact however on natural capital and current livelihoods of the Lamu people.

Revenue mobilization in the County & central Government allocation

Main revenue sources of the County Government are allocations from central Government and local revenue collected from the County. The County has a variety of revenue sources from which revenue is collected, and a few where revenue is not collected such as boat transport and honey production. Actual social economic situation of the County should be reflected in the criteria used to allocate revenue to counties by the revenue allocation commission

Economy is basically based on the primary sector (farming, fishing, livestock, mining, tourism)

The County has a rich natural capital resource base from which a variety of economic activities and products are produced. Crop farming activities yield a variety of crop products sold directly to consumers within Lamu while others are marketed outside the County. Livestock activities as a means of livelihoods ranging from cattle, sheep and goats, bee keeping, fishing, aquaculture, poultry and pigs are widely practiced in the County. Mining activities are limited to sand harvesting, and stone quarrying besides tourism supported by Lamu heritage, beaches, and water sport. The County has not ventured into value addition to enable rationalization of its production system thereby diversifying its economic base.

The potential of the primary sector to create value and employment is not fully exploited (value addition)

The primary sector is not well linked backwards to support services, the necessary policies and forward to manufacturing processing,

packaging, marketing and distribution. Transformation of the primary sector into value addition requires a Planned scientific approach to farm production and involvement of the Community.

Inadequate and poor economic infrastructure has affected economic operations of the County (roads, ICT, energy & water & sanitation)

The competitiveness of localities for investment and economic prosperity is depended upon the quantity and quality of infrastructure facilities and services. These facilities and services provide support to the economy and besides facilitate the movement of skilled and non-skilled labour to spaces of opportunities. Lamu County has available road network connecting production and residential spaces, other social spaces but is poor quality and impassable. There are also areas of missing links in the County making it difficult for production activities and movement of people. Water and sanitation services are inadequate in the County as well as ICT facilities and services, which increases the costs to investors. It limits the capacity of the Country to attract investment.

Insecurity situation in the County has affected economic activities and curtailed inflow of investments (local, sea, and terrorism)

Lamu Country faces insecurity both within due to inability of many of the young population to attend school and increasing cases of drug addiction. Recently there has a risen the problem of terrorism and radicalization from Somali and gaining a lot of momentum along the coast. It is also attributed to many years of lack of investments in the County particularly roads, water and sanitation. This has created a fertile ground for the spread of insecurity within that works against investments in the County. The insecurity has affected tourism industry of the County leading to underutilization of available hotel facilities.

Inadequate skilled human resource in the County (literacy levels, and technical training)

The labour force is handicapped by lack of skills due to very low levels of school attendance attained in the County. This has a variety of implications namely, inability to utilize the available opportunities provide by the natural capital, and inadequately prepared to be part of the implementation of national development project of LAPSSET.

c) Policies

- Harness the natural capital potential to diversify the County economy to meet local and export market needs (dependent on crop farming, livestock, and fishing, tourism)
- Utilise a value chain approach in the primary sector to help tap all the potential of the primary sector moving it to the first stage of industrialization (input supply, production, processing, marketing and distribution)
- Improve economic infrastructure to attract business and industry (roads, energy, ICT, landing sites)
- improve security and safety in partnership with central Government and other actors in Lamu (local, terrorism, sea safety)
- Develop human resource capacity of the County to tap into local resources and meet the demands of diversified competitive economy (Education & technical training)

d) Actions

- Training support to various local economic groups
- Construct value chain diagrams for various primary sector products where there is potential to expand economic opportunities through value addition
- Lobby central Government investment in areas of roads, energy, ICT water and sanitation
- Put in place local security system or infrastructure with the help of central Government

- County to spearhead education activities both at primary and secondary school level that is well distributed with all the facilities
- Set up technical training institutes in the County through partnerships

TOURISM & HERITAGE

The making of this CSP noted that to devise a complete County-based tourism model, it had to consider the socio-economic, and natural aspects of the County revolving around culture/heritage, wildlife and marine.

a) Objective

- Promotion of Lamu as a unique investment destination with a complete triple package (culture/heritage, wildlife, and Marine assets)
- Increase tourist revenue through quality services and new high value niche products
- Improve and diversify accommodation facilities and services to attract tourists as well as design a complete package promotion campaigns to market the potential of Lamu as a tourist destination

Targets: Increase the number of tourists visiting Lamu

b) Issues

Rich unique tourism input resources both terrestrial and marine (wildlife, ox bow lakes, beaches, ocean, marine park, mangroves)

Lamu County is naturally blessed with tourism attraction sites that are on land, water and heritage sites. The land has a variety of tourism resources in form of wild animals and birds, while the sea has green mangrove ring, beaches, marine park and heritage sites. Some of the sites have been declared world heritage sites adding a lot of value to the County, which it has not been able to utilize. There are hotels but of limited capacity and class to accommodate the number of visitors the County is capable of attracting when properly.

Intended national development project (resort city, access to Lamu by air, road and railway)

National infrastructure and urban development projects are to be implemented by the national Government in Lamu. These projects are a superhighway, railway, and an oil pipeline to Southern Sudan, and Ethiopia. In addition, there will be a resort city and an international airport constructed. They will open up the County for more people inform of investors, tourists and workers. This will facilitate trade between Lamu, the rest of the Country and beyond. At the same time, the location of the projects will interfere with current land use and conservation activities both on land and on water.

Encroachment and on wildlife spaces, forest and poaching (development projects, human settlements, poaching)

Terrestrial tourism attraction based on wildlife, punctured scapes, and forests are threatened by encroachment of human settlements into wildlife and forest areas, and rising cases of poaching. This has the effect of reducing the wildlife, and forest resources and diminishing water resources thereby weakening its tourism potential. Conservation efforts are constrained by the current state of marauding radicalized groups in forests and wildlife areas.

Inaccessibility of the beaches and pollution (properties to the sea, point pollution sources)

Beaches as recreation and tourist attraction assets have been greatly interfered with by privatization hence limiting public access. Some areas of the beach fronting human settlements are experiencing pollution from human activities both liquid and solid waste. This has also compromised safety along the beaches in case of dawning in the ocean in relation to safety areas for rescue which are unavailable.

Inadequate publicity of tourism potential/resources of Lamu (heritage sites)

The vast tourism opportunity of the County as mentioned earlier has not been marketed effectively within Kenya and to the rest of the world. Besides, the County has faced a long period of infrastructure marginalization from the main development corridor limiting accessibility choices to use of water and air transport. This

has culminated into underutilisation of the tourism potential of the County that is both terrestrial and marine, culture, and heritage.

Inadequate maintenance of current gazetted heritage assets

Lamu County is on the world heritage map by being part of a UNESCO world heritage site of the old Lamu town, Kiunga Marine National Park, and the Tana Delta area. The current heritage area of Lamu Old town is inadequately maintained due to ignorance of people about heritage value and lack of affirmative action from the authorities in charge of the heritage area. Local people of the town have not made use of the heritage status to maintain and improve the town for heritage and investments. Heritage value is latent to many in the town and tapped by those who come to invest in the County particularly on the beach front. Value of heritage has not been recognized by the local people

Numerous heritage sites have not been recognized and gazetted

It has also numerous historical sites that have not been surveyed and secured as heritage sites such as Siyo in Kizingitini, Witu and others. This is an opportunity to the County requiring to be prioritized for identification, and put in place measures to gazette them. Addition of the other heritage sites to those already gazetted enhances the cultural and heritage identity of the County to be marketed for tourism attraction.

Traditional crafts have not been well harnessed as tourism assets

Traditional crafts are also available in the County from local people. It forms part of cultural expression and material culture transformed into beautiful products of value to the visitors. Special markets for traditional design crafts can go a long way to make opportunities available to the people involved in traditional crafts.

Lamu does not benefit from past and current tourism activities (fortified tourism enclave)

Value of plots on the beaches has been on the rise hence out of reach to the local people. There has been a tendency to allocate and reclaim plots from the sea on the beach front by investors from Europe and the Country. Investments in hotels along the beaches

are owned by foreign investors who run their operation without involvement of the local people in any of the hotel chain activities

c) Policies

- County should resolve to protect and conserve available heritage sites through regulation and maintenance
- Resolution of conflict revolving around wildlife, LAPSSET infrastructure project and associated components, and human settlement to enable protection and conservation of wildlife areas through appropriate land use Planning
- Encourage and promote the establishment of conservancies on the model of NAROK but linked to culture, heritage and marine tourism
- Package tourism attraction assets and market the County locally and internationally using various channels (Posters, billboards, website)
- Institute measures in collaboration with partners to restore and maintain sites that have been abandoned (Museum, WWF, UNESCO, County, Community)
- Beaches should be protected as public assets and their accessibility enhanced
- The benefit sharing principle should be applied to enable the County and its residents to benefit from tourism
- Community to be educated and motivated to offer a variety of services to tourists (crafts, culture, taarab music, local food)
- Decentralize the resort city concept with core functions at one place while others are dispersed according to unique assets offered in specialized locations
- Enhancement of security and safety both on land and water to achieve a peaceful environment for social economic activities
- Linkage of the port of Lamu and Port of Mombasa and possibly up to Durban in South Africa for Cruise Tourism
- Improve tourism facilities and services by private sector

d) Actions

- Pass a policy for reclamation abandoned heritage sites
- Prepare an inventory of the sites for reclamation

- Prepare subject Plans, survey, gazette and rehabilitate the sites
- Map out the conflict areas and segregate the activities through zoning
- Carry out regular maintenance of heritage sites
- Advertise the available tourism attraction using different media
- Breakdown tourism into various activities and assign responsibilities to various actors
- Reclaim and regularly maintain public beaches as public recreation spaces for locals and visitors
- Hold capacity building seminars to enable them take advantage of heritage value (capture training on specific sites)
- Identify areas for locating training centres to train locals in tourism and hospitality
- Register and license tourist porters and tour guides
- Generate revenue from passengers to support the local porters and boat operation

AGRICULTURE & RURAL DEVELOPMENT

a) Objective

Enhance productivity and production of agriculture and emphasize on value addition for economic improvement.

b) Issues

Available arable land and diversified farming activities

The County has a land surface area of 6,474.7 Km² out of which 5,557 km² is agricultural land. The County falls within the CL3-coconut cassava zone taking 9.2 percent of the arable land size measuring 511 km²; CL4-cashewnut cassava zone forming 60.4 percent of the land size measuring 3356 km², and CL5-livestock millet zone with 30 percent having land size of 1666 km²; CL6-ranching zone with 0.43 percent having land size of 24 km². Farming takes place on only 69,025 Ha out of the total size of 196, 900 Ha. Various crops are grown in accordance to agro ecological zones. Crops farming employ the majority of people in Lamu and in 2014, a total of 314, 550 tonnes of both food and cash crop was realized.

Mechanized farming on a land in Mpeketoni



Source: CURP, 2016

Conflicts between crop farmers and pastoralists and between crop farmers and wildlife

There is specialization of economic activities within the County as dictated by the agro ecological zones. These specializations in livelihood are crop farming, livestock rearing, wildlife, and commerce and trade in various urban spaces. Growing number of people has led to the intensification of land use activities and in times of drought, conflict between farmers and wildlife and also wildlife and human beings and between pastoralists and farmers is enhanced. The conflict is compounded by pastoralists from other counties who flock to the County in search of pastures and water during drought. This calls for regularization of land use with clear recognition of land use for the activities in conflict together with livestock and wildlife migration corridors.

Poor road conditions and communication network

Road network infrastructure in Lamu is relatively good but in a poor state. There are only 7 kms which are tarmacked while the rest of the road network lacks drainage and impassable when it rains.

The roads linking to productive scapes and market centres which are basically urban pose a serious challenge of mobility. It leads to

problems of transporting inputs to the farm as well as produce to the markets. Some parts of the County are not linked by road, hence difficulty of connection. Besides affecting agricultural production, the poor roadnet work, post-harvest losses to farmers produce, and insecurity discourage investment. This calls for increased investment in roads and communication network.

Inadequate agricultural support services (research and extension, storage, and marketing)

Agricultural production for commercial and supply of raw materials for industrialization requires specialized research, extension services for application of improved techniques, facilities for storage and ready outlets for the products. This provides incentives for the producers to enhance production, thereby generating more income and creating more employment either directly or indirectly. These services are inadequate leading to only a small part of crop production potential being realized. For instance, out of the total 196,900 Ha of arable land only a third of it is utilized. This calls for investment of in higher leadrning institutions, research development and enhancing ICT in information dissemination.

Inadequate input support (seeds, tools and equipment)

Input requirements in the production of crops range from affordable high-quality seeds, appropriate fertilizer, tools, and machinery and farm chemicals. Besides the above regular supply of water is required and farm labour for better output. Policies to streamline input support to the crop farming subsector is essential for transformation of agriculture in the County.

Untapped irrigation potential

Crop production is rain-fed and seasonal. In the County, less than 100 ha of irrigation potential have been developed out of 3,000 ha existing irrigation potential. Success in irrigated farming is limited to Lamu West where individual farmers practice irrigation around swamps, water pans and shallow wells for horticultural crop production despite existence of river tana. The irrigation potential is based on surface and underground water including water harvesting and storage but remain unexploited.

Inadequate market infrastructure

The County has two physical markets for farm produce: one at Amu and the other one at Mpeketoni and are administered by the County Government. Other areas of Witu, Hindi, Kiunga and Faza are concentrated with vegetable kiosks situated in the town centres and along the major roads. The kiosks mainly sell vegetables, fruits and cereals sourced locally from local farmers. Inadequacy in storage and processing facilities in the County has continued to constrain marketability of particularly perishable goods such as fruits and vegetables. As a result, farmers are left at the mercy of exploitative middlemen who buy farmers' produce at very low farm gate prices thus impoverishing them.

Lack of value chain approach to analysis and improvement of the crop farming sector

Crop production in the County is affected by inadequate policies, standards, laws and regulations, pre-production, production, harvesting and storage, transportation, manufacturing and processing, marketing and distribution. Consistent high production from this subsector is affected by lack of value chain approach to Planning for agriculture linking it to inputs, production, processing and marketing. This brings about spatial linkage between production and urban centres for value addition besides exploiting backward and forward linkage. Agriculture is characterized by scarcity of value addition leading to excess capacity.

c) Policies

- Improvement of the road network and connectivity of the farming spaces to facilitate movement of labour, inputs and output
- Establishment of crop value chains to enhance production, productivity, and value addition to diversify the economy
- Strengthen the spatial linkage agricultural productive scapes and commercial nodes for value addition and marketing
- Protection of crop farming areas from grazing zones to avoid pastoralist-farmer conflict

- Improvement of agricultural support services (research and extension, storage and marketing of produce) through publicprivate partnerships
- Liaision with the private sector to facilitate improved quality inputs supply to farmers (seeds, fertilizer, and tools and equipment)
- Promotion of irrigation farming to grow high value crops throughout
- Establishment of marketing policy and regulation
- Apply value chain to link all the activities from input supply to production, processing and marketing so as to diversify opportunities
- Diversify opportunities and increase incomes through value addition
- Improve production of agricultural produce by using better techniques of farming to provide the required raw material for agro-based industries
- County to promote mechanization of agriculture through purchase and availing of farm machinery

d) Actions

- Costruction of feeder roads to farming areas
- Presentation of the road network improvement programme to either Kenya Rural Roads Authority or Kenya Highways Authority for their action (Specific roads in farming areas)
- Clear zoning of land for various activities to resolve conflicts
- Setting aside of land for research station and demonstration purposes to the farmers of new seeds and modern farming practices
- Establishment of irrigation infrustructire to grow high value crops
- Training and employment of extension workers
- Breaking into various activities the process of each crop production from input supply to production, harvesting, to marketing for improvement (Value chain mapping)
- Strenhthening of public- private partnership
- Mobilization of the private sector in agriculture investment and also agribussiness

 Planning for industrial zones in selected urban areas for establishment of agro-based industries

FISHING

a) Objective

Improve productivity and production of fish both fresh and marine for economic enhancement and value addition

b) Issues

Expansive fishing area of the sea and availability of a variety of fish species

Sources of fish in the County are from marine waters, fresh water and to a small extent aquaculture. There is expansive fishing area of the sea to the extent of the exclusive economic zone of 200 nautical miles. This fishing area has a variety of fish and in large quantities like lobsters, crabs, octopus, sea cucumbers, and turtles. Lamu has some of the unique/ rare fish species along the coast of Kenya. However, all these marine and fresh sources are underutilized, leading to less output, low revenue and low rate of employment. This is a livelihood for over 5,000 fishermen.

Low volume of fish harvested in the County compared to available resource

Quantity of fish harvested in the County estimated at 2500 metric tonnes worth ksh 380 million in 2015 and from fish landing sites from County. However, inland fish sources do not contribute much due to low adoption of fish farming. Fishing activity in the County is limited to the shallow waters due to lack of modern fishing equipment.

Inadequate fish cold storage

There is inadequate fish cold storage for the fishermen at all available 22 fish landing zones, leading to post-harvest losses and low generation of income.

Low value addition to fish harvested

There is inadequate comprehensive Planning in pre-fishing stage, fishing, storage, processing, marketing and distribution value chain.

This has denied the County employment opportunities and revenue generation.

Conflict with LAPSSET infrastructure projects

Implementation of LAPSSET infrastructure project and resort City has the potential to enhance demand for fish and its products. However, the LAPSET will bring about disruption to current livelihoods, degradation of environment especially conservation areas, fish landing sites and transport on waters among the islands. Clearance of mangroves and taking of fish landing and fishing ground by the port infrastructure will affect the current livelihoods based on fishing and fish breading areas.

Unprotected fish landing sites

The County has 32 recognised fish landing sites out of which 22 are registered. There is need for recognition and securing of all the fish landing sites.

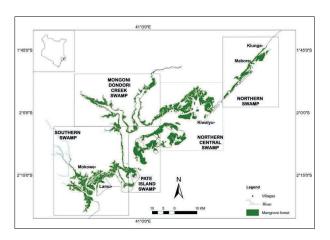
Ilegal foreign fishing vessels encroaching tereterial waters

Due to lack of effective monitoring and surveillance of the exclusive economic zone along the Kenyan, there has been illegal fishing from the Kenyan waters by other Countries contrary to international law. International Companies do indiscriminate fishing and exhaustion of certain fish species. It is an opportunity area for the County of Lamu to harness the economic potential of the blue pearl.

Threats to fish breeding sites due to destruction of mangrove forests and corals

The County of Lamu boasts of the largest reserve in the world. Mangroove and corals provide sufficient fish breeding ground for some fish species. Mangrove sites constitute an important fish breeding area and contribute to protection of the inland and islands against the sea, as well as reducing carbon emissions. Logging and clearing of mangrove for LAPSET and Coal Plant is a threat to fish multiplication and mangrove survival in the County.

The ring of mangrove forests in the County below:



c) Policies

- · Modernize fishing equipment to enable deep sea fishing
- Incorporation of the defined ocean area into the land space of Lamu and the Country as recognized internationally
- Improve on fish marketing by provision of cold storage facilities
- County in partnership with stakeholders to promote marine research
- Mainstream fishing activities in LAPSET
- Provide incentives for local community to undertake fish farming in the mainland
- Improve and maintain all the fish landing sites
- In partnership with the Central Government, appropriate measures be instituted to protect the territorial waters of the Country
- Zone and protect the mangrove forests from destruction
- Diversify opportunities for improving incomes and employment through value addition of fish resources
- Capacity building of the local people on how on modern fishing equipment
- Strengthen MCS framework for sustainable exploitation of fisheries resources

d) Actions

- Purchase of initial modern fishing equipment by the County Government
- Construction of fish cold storage facilities
- Establish fish processing facilities with partners
- Establish a fisheries research and training institutions with partners
- Prepare regulations to guide the fishing industry
- County Government in partnership with central Government to provide land for establishment of more maritime police station to safeguard the exclusive economic zone (site)
- Train and employ maritime police
- Delineate, survey and protect the mangroves as a fish breeding source
- The surveyed land to be made public land
- Rehabilitate the fishing landing sites

LIVESTOCK PRODUCTION, HEALTH & RANGE MANAGEMENT

a) Objective

To improve livestock production, management and value addition for economic development

b) Issues

Unprotected expansive land for grazing

The ranches provide livestock grazing areas for both local and migrant pastoral communities from neighboring Tana River and Garissa Counties especially during the dry season between June and October. These ranches are Pandanguo at 60,000Ha; Witu Nyogoro at 32,000Ha; Amu at 26,000Ha; Witu Cooperative at 9,600Ha and Nairobi at 8,800Ha. Part of Nairobi ranch is on the Tana River side within the delta and its total size is 23,000Ha. The vast land available attracts illegal grazing and during the period of June to October approximately 111,160 cattle from neighbouring counties graze within the ranches. These grazing areas have traditional livestock routes that link them and hence require protection.

Annex FR6

Accessibility to water sources and pasture in the Tana River delta

Ranches within Lamu as pointed above are within the punctured scapes which contain swamps, seasonal rivers, local lakes, and Tana River delta water and pasture that is crucial for livestock. Water and pasture along the livestock routes in the ranches are important attraction to pastoralist communities in Lamu. The seasonal increase in the number of cattle grazing in the ranches and wetlands points deplete pastures and water which is a potential for pastoralist-farmer conflict.

Encoachmnent of water catchment areas and apiary sites that support livestock livelihood

Human settlement and development have encroached wetland areas which are watering points for livestock and bee keeping. This reduces water accessibility for livestock watering leading to community conflits and also reduces production and income.

LAPSSET infrastructure development and livestock subsector

LAPSSET infrastructure project and resort City comprises of highway, standard gauge railway, Lamu port, airport, oil pipe line and a resort City. The above infrastructure project will affect the livestock and wildlife movement routes interfering with community livelihoods and conservation. The project will attract illegal human settlements eating up into food production thereby compromising on food security for the County.

Agro-pastoralists conflict due to lack of designated grazing zones

A conflict among farmers, pastoralists and wildlife constrains coexistence relations. This has a risen as a result of expansion of human settlements and crop farming activities into livestock grazing areas. Lack of designated zones for farmers, livestock and wildlife besides encroachment by settlements has opened up avenues for conflicts which need to be considered in the spatial Planning process. Conflicts are evident on border zones of the land uses for activities mentioned.

Inadequate livestock Health infrastructure (dips and vaccination crushes, grazing and, water facilities)

Inadequate Livestock health infrastructure comprising cattle dips, vaccination crushes, abattoir, taneries and, auction yards, holding grounds) increase the control of livestock diseases.

Provision of the above infrastructure in designated livestock zones reduces conflicts, animal diseases and ensures enhanced production of high value animals (beef, cattle sheep, goats, donkeys, dairy cattle and goats and others which are raised intensively at home.

A water point in Bahari Ward



Source: CURP, 2016

Provision of the above infrastructure in designated livestock zones reduces conflicts, animal diseases and ensures enhanced production of high value animals (beef, cattle sheep, goats, donkeys, dairy cattle and goats and others which are raised intensively at home. A number of livestock producing areas are lacking the infrastructure mentioned such as Hongwe, Baharini, Mapenya, Uziwa, Hindi, Faza and Kizingitini.

Lack of value chain analysis of the livestock sector for enhanced performance

Livestock subsector just like crop farming and fish production lacks a comprehensive Planning approach based on value chain for enhanced performance and opening up of more opportunities. The value chain approach entails consideration of policies, laws, regulations, standards, inputs, roads, markets, slaughter houses, actual livestock production, processing, marketing and distribution. This has led to low investment and bussines in livestock sub-sector.

Policies

- Zoning and protecting livestock grazing areas and stock routes (mapping)
- Preparation of land use policy to cater for the needs of crop farmers, livestock keepers County and national development needs and wildlife through appropriate land use policies
- Improvement of the livestock infrastructure (research and extension, livestock export zones, dips, vaccination crush, crush pens, abattoir, water points, holding grounds and auction yards.
- Improvement of the marketing of livestock and its products (auction yards, livestock markets) where livestock is located
- Diversify opportunities of income and employment through value addition
- Establish fodder conservation areas and strategic fodder reserves

c) Actions

- Map out demarcate the livestock grazing areas and routes
- Secure the demarcated livestock routes as public land
- Clear zoning of land uses for farmers, livestock, and wildlife with respective land use regulations
- Identify sites for livestock infrastructure and develop the infrastructure (research and extension, markets, cattle dips, loading ramps and holding grounds)
- Rehabilite mokowe livestock dock yard
- Improve current livestock market area at Nagele
- Identify appropriate site for an abattoir and construct value addition industries (meat, and leather processing)

Annex FR6

- Create a livestock disease free zones for dairy and beef export purposes
- Identify a land among the revoked ranches and develop it for a pilot project fodder on production
- Train and employ veterinary officers from diploma to degree level

TRADE & INVESTMENT

a) Objective

To upscale current trade and commercial activities through promotion of trade and investment for ehanced economy of Lamu

Lamu Old Town below:



Source: CURP, 2016

b) Issues

Available commercial centres where trade activities take place in a specialized manner

Existing trading commercial nodes and emerging ones provide space for the location of diverse wholesale and retail activities. Commercial nodes within the County appear to have specialized in activities they perform best for instance Hindi and Mpeketoni for agricultural produce and farming, Lamu town for heritage, cultural festivals and tourism, boat making and repair in other centres,

besides small scale industrial activities of carpentry, metal welding and fabrication.

The commercial nodes need proper land use Planning and provision of infrastructure facilities and services (roads, parking, public transport, water and sanitation, financial services, security, energy and street lights) to enhance the commerce and trade function. This will open up the County for investors to take advantage of the available investment opportunities in Lamu.

Limited investor knowledge of opportunities in Lamu

Available diverse investment opportunities in Lamu are yet to be exploited by investors through marketing and County annual investment forums. There is need therefore to rethink the promotion strategy besides working closely with the communities, national Government and other partners to guarantee security and safety to investors in an era of terrorism attacks and operations. Promotion activities will be complemented by investments in infrastructure facilities and services to move the County from a basic level of existence to a secondary level of achievement motivation.

LAPSSET infrastructure development project presents an opportunity to increase the trade capacity of Lamu

Transport and Resort City components in the national development project of LAPSSET are vital for trade, commerce and industrial future of the County. With provision of adequate security there will be increment for investments and export of Lamu products to other destinations. Lamu County stands to gain more through export trade and enhanced use of its resources. To avoid polarization along the LAPSSET infrastructure corridor, there is need to invest in other road network of the County urgently and provide the missing links, besides advance land use Planning of commercial nodes and economic corridors. Local population should be prepared to take advantage of the national development projects in various fields through skills enhancement.

Low level of operation of current trade and commercial activities Commercial nodes in the County suffer from low level of economic operation due to inadequate Planning, poor infrastructure and services. Trade and commercial activities have been affected by insecurity and transport challenges particularly access to the County by road. This reduces the attractiveness of the County for investment hence low volume of trade. A periodic County economic survey is required to take stock of public sector economic activities and private sector, levels of operation, and constraints to business operation so as to evolve a package for enhancing business and industrial activities in the County.

c) Policies

- Development of legal framework that create enabling environment for trade and commece
- Improvement of the commercial nodes for enhanced trade and commerce along lines of specialization through Planning and provision of necessary services
- promotion of local and external investors by harnessing the available opportunities in the country
- Improvement of the capacity of the local people to participate in trade and commerce and take advantage of the opportunities brought about by the LAPSSET infrastructure and resort city project
- Periodic carrying out of business census and surveys to gauge the level of economic operation and constraints to economic performance
- Strengthening of partnerships between locals and foreigners to tap into investments opportunities of the County

d) Actions

- Identification of commercial nodes in the County, their specialization and determine levels of services (Witu, Mpeketoni, Kibaoni, Mokowe, Hindi, Faza, Kiunga, Kizingitini, Majengo, Amu)
- Planning of the commercial nodes and provision of services to create an enabling trade and investment environment
- Develop an inventory of trade and investment opportunities in the County
- Develop an opportunity investment package for marketing the County to both local and international investors

- Organize trade fares and investors fora
- Enforce weight and measures regulation
- Provide incetives to potential investors
- Establish funds for entrepreneur for empowerment
- Train local people and provide them with incentives to participate in trade and investment (Skills upgrading, and imparting of new skills)-Kenya Institute of Management, Cooperative College,
- Carry out a business survey for purposes of enhancing business performance
- Provide a one stop shop centre for trade and investment information, and processes investment in the County

RESOURCE MOBILIZATION AND UTILIZATION

a) Objective

To diversify revenue mobilization to provide effective services to the public and also invests in capital for prosperity of Lamu County.

b) Issues

Available local infrastructure for collection of revenue

The County has available infrastructure of revenue mobilization inherited from the previous system of central and local Governments. This provides the sources of revenue and means of mobilization of the revenue at the County and incooperate modification of more sources.

Economic infrastructure development gap arising from past policies of a centralized Government system and a weakened semi-autonomous local Government

County Government of Lamu faces a difficult task to create a favourable environment to attract investments to boost and diversify its economic base beyond primary production. The above has a risen due to the past policies of giving little attention to infrastructure development in the County especially roads, water and sanitation, and energy by the centralized national Government. The County is further located very far from the traditional main economic development corridor of the Uganda road and railway now being improved to standard gauge. Capacity of local Government is also weak to respond to challenges of Planning and

investing in infrastructure. This has isolated the County for a long time making it unable to attract investments and has been worsened by current state of insecurity from terrorism activities. The County has a weak economic base dominated by the primary sector impacting on revenue collection

Inadequate provision of resources from the national Government allocated by the revenue commission

Revenue allocation by the central Government is largely on indicators that continuously leave the County receiving low allocations. Recent spree of investment in road infrastructure in the County and Planning of towns have made the County further marginalising it. A County faced with past neglect of investments in road network, water and sanitation, and energy and now faced with infrastructure requires more national attention in resource allocation to allow for consolidation of development efforts and cohesion. Implication is the collection of revenue from limited sources.

Inadequate use of available funding opportunities

Available funding sources are in form of partnerships and depend on a clear inclusive framework of development provided by County Governments for various sectors. Clarity of development projects and outcomes and with appropriate policies for crafting partnership can go a long way in providing opportunities for different funding source apart from central Government allocation. This can benefit projects in health, education, water and sanitation.

Disproportionate resource allocation between functions of recurrent and development

Allocation of resources to categories of capital development and recurrent is in favour of the latter at the expense of the former. This affects the creation of the physical capital base that is essential for social economic progress. This state of affairs has a risen due to lack of appropriate policies of transition from a centralized system of governance to a devolved system. To the past central and local Government employees has been added County Government employees expanding the number of employees, besides allocation

of more functions to County Governments that are not marched by adequate resources.

Inadequate use of the cooperatives as a vehicle of resource mobilization and investment

Employees and transport saccos have been very successful in mobilization of resources for investments. The same success story can be translated into production sector and help create local value addition enterprises to diversify the economic base of the County.

c) Policies

- Diversify the local economy to expand the revenue base of the County
- Enhancement of local revenue collection through appropriate measures and rationalization
- Institute frameworks of private public partnerships and also public/ public partnerships
- Formulate policy issues and social economic characteristics for presentation to Revenue Allocation Commission to get more allocation
- Encourage and improve the cooperative sector as a mechanism of mobilization of resources for investment
- Explore mechanisms of allocation of more funds to capital development projects

d) Actions

- Inventory and rationalization of revenue sources of the County (rates, user charges, marine transport, licenses, motorcycle transport, Planning permission, loyalties, benefit sharing etc)-GIS inventory
- Formulate policy and regulations to guide partnerships in areas of investments, infrastructure projects and implementation of Plans
- Carry out local social economic survey and past gaps of lack of good network of roads to lobby the CRA for more allocations

 Sensitization of the people on the benefits of cooperative movement in mobilization of resources

- Employment of cooperative officers to implement the objectives of the County Government
- Allocate more funds to capital development projects

COMMUNITY DEVELOPMENT

Lamu County, being of international repute, is cosmopolitan and made of population composed of indigenous communities, settler migrant communities from the rest of the Kenya as well foreign settlers. The major communities in Lamu County are mostly the Bajuni, kikuyu, Giriama, and Pokomo. The Bajuni, a mix of Arab and Bantu ancestry, is the predominant community in Lamu. The minority communities are the Aweer, Dahalo, and Orma. The indigenous Lamu communities include the Bajuni mostly found in Mkomani, Faza, Shella and Kiunga wards, Aweer living in Basuba, Hindi and Kiunga wards, Dahalo, Orma, and Wardei-Somali who are a marginalized community in Kenya experiencing land insecurity, having very low education levels and poor access to other basic services and facilities.

Immigrant settler communities from within Kenya are majorly the Agikuyu and Pokomo communities who practice agriculture and trade in Bahari, Hongwe, Witu and Mkunumbi wards; the Luo community who practice inland fishing in Witu Ward; and the Somali community who are settling pastoralists in Witu and Mkunumbi wards. Pristine Lamu has attracted renowned foreigners who have invested and settled in the County. Arabs, European and Africans from other nations have been attracted by the heritage and lifestyle in Lamu and have now settled in the County.

A majority of the communities in Lamu County still depend on nature-based livelihoods such as: fishing, mangrove cutting, hunting and gathering, pastoralism, farming, eco-tourism operators, and many others. Therefore, it would be sustainable to incorporate communities in the development agenda of Lamu County based on their historical and livelihood character.

Objective

- Build capacity for the local community in natural resource rights access, utilization and benefit
- Ensuring a just and cohesive society enjoying equitable social development (Kenya's Vision 2030)
- Optimizing community resourcefulness to improve Lamu people's Welfare
- Ensure Community equalization through integration in governance and development

Issues

Community Prowess

The various communities residing and drawing their livelihoods within Lamu have distinct dexterities that can be parlayed to enhance development of the County. Influenced by their strategic and historical location, deep culture, rich history, welcoming nature and fishing and trading heritage the Bajuni Community appeals as the community to enhance tourism, trade, marine biodiversity conservation and fishing activities at the Lamu Archipelago. The Agikuyu and Pokomo would be best to enhance agro-production and commerce as they have developed these enterprises since settling in Lamu. The Luo would be promoted to enhance inland freshwater fishing as they have endeavoured on this front in Moa. Due to their location within biodiversity protection areas, biodiversity conservation heritage, dependency on forest livelihood and community vulnerability the Aweer and Dahalo communities appeal as the communities to enhance tourism and biodiversity conservation within Lamu County mainland. The Orma are the ideal community to promote livestock keeping, ranching and wildlife conservation within Lamu County.

Land Dispossession

Hunter-gatherers depend on the availability of forestlands where their freedom of movement and their access to the natural resources on which their subsistence relies on are not limited. However, the indigenous hunter-gatherers have experienced a continuing process of land dispossession and mobility restriction, putting their traditional livelihood at risk. Their ancestral forests were turned into protected areas, while they themselves were

gradually deprived of their previous user rights and eventually forcibly evicted. The Dahalo and Aweer, who live deep within the Witu and Boni forests respectively, are faced with a similar fate as a consequence of the gazetting of their forests by the Government. Government restrictions on cutting down of mangrove trees, which is a significant income earner for Bajuni community members who traditionally have been harvesting mangroves.

Mobility Restriction

Pastoralist communities depend on the availability of large tracts of rangelands where their freedom of movement as they marshal their livestock to access good pasture and water are not obstructed. The Lamu wetlands used for livestock during drought seasons are shrinking and further restricting livestock movement within the County. The Boni-Lungi forest ecosystems has over the years been shrinking with consequently less wildlife limiting the nomadic lifestyle of the Aweer community. Moreover, hunting in the Lamu forests became illegal and controlled by the Kenyan Wildlife Services (KWS) making hunting and gathering an obsolete livelihood for the Aweer and Dahalo communities. They are trying to adopt other livelihoods such as farming and livestock keeping without much success so far. The Aweer and Dahalo communities may become extinct if they will not be made aware of their rights and given special attention and protection.

Community Insensitive National Development Projects

Infrastructural developments also affect the development of communities in Lamu County. The proposed, Lamu Port and Lamu Southern Sudan Ethiopia Transport Corridor (LAPSSET), national project will strongly affect the livelihoods of the indigenous Bajuni and Aweer Communities living on the coast as well as the indigenous Orma pastoralists using rangelands along the corridor as it is expected to take up large tracts of land. In the Tana Delta area, large irrigation and Plantation projects, among others, are threatening the livelihoods of the Dahalo, Luo and Pokomo and the environment they base their livelihood in. Despite the community's lacking awareness and failing to be consulted most proposed development projects are ongoing without adequate consideration

of the fragility of the local ecosystem on which the Lamu communities are highly dependent on.

Climate and Environmental Changes

Climate change is a reality especially for Lamu communities who draw their livelihoods from natural environment. The pastoral areas of Tana River and Garrisa Counties dry lands have become more and more unreliable for livestock keeping due to the slow but surely depletion of its rangelands caused by erratic rainfalls patterns and overgrazing livestock population. The situation is worsened by high evaporation rates as global temperatures rise. The 2009 and 2010 droughts are considered the worst in the last 30 years affected the communities in Lamu especially the Orma who lost most of their livestock.

The livestock populations of Tana River and Ijara have been depending on Tana Delta and Lamu wet rangelands respectively during the dry season and this dependency has been increasing over the time. As by now, for example, the herds from Ijara are spending more time in Lamu County, counting for 8 months of the year, than in Ijara with 4 months of the year spent there only. As the arid lands of Tana River and Ijara can hardly support its livestock population and the traditional dry season grazing areas of Tana Delta and Lamu are shrinking over time, the pressure felt in Tana River and Ijara by its own livestock and livestock from the North of Garissa County is being transferred as a ripple effect down southwards to Lamu and the Tana Delta. This has resulted into a drastic reduction of nomadic movements in terms of geographical scope and led into pastoralists versus farmers' conflicts.

Massive siltation of the Tana River, has made it change its course and reduced its water level, threatening to the small indigenous communities whose production systems and livelihoods are linked to the dynamics and functioning of the river—wetlands ecosystem. This also affects the Orma pastoralists, who graze their cattle in the areas around the floodplains. Agricultural communities in Lamu County are also affected as traditional knowledge regarding Planting and flooding seasons is now inadequate due to the unpredictability of local weather conditions.

Inter Community Conflicts

There have been recurrent conflicts between pastoralist and farming communities in Lamu County as mutual accusations of trespass often end in hostilities, with casualties on both sides. These conflicts are a result of complex combination of causes including land occupation, increasingly severe and more frequent droughts leading to competition over control and access to pasture and water, increasing levels of poverty, and the diminishing role of traditional governance systems. The consequences of these interethnic armed conflicts are a loss of human lives, widespread destruction of valuable property, increased hatred between communities, and increased economic hardship as a result of a loss of livelihoods, leading to high levels of starvation and malnutrition among the displaced groups and unprecedented dependency on relief food. The situation is precarious, intercommunity conflict in Lamu County is still under control as mechanisms are in place to prevent and solve the conflicts. In this regard, young herders are being instructed by elders not to bring animals near the farms: when an incident happens, compensation follows; in Lamu where several communities live together, elders from different communities happen to meet at their own initiative as a committee to discuss the problems in the area.

The conflict issue is not limited to pastoralists versus farmers in Lamu County as Wildlife and farmers' conflict is another recurrent issue in Tana Delta and Lamu and is caused increasing population, competition for land and land-based resources and encroachment into fragile ecosystems. Lack of a general framework to guide development and resource utilization of the Tana Delta and Lamu wetlands continues to undermine natural resource conservation efforts and community interests and sustains probabilities of community conflicts.

Insecurity

Insecurity has been a major issue to community development in Lamu County for many years as a result of Shifta bandits and terror groups from the neighboring war-torn Somalia. The insecurity is affecting community livelihoods and trade. Recent attack against settler communities linked to Al-Shabab terror group has in

affected agro-production and commerce within the County. The terror attacks led to killings of over hundred people mainly from the settler communities, uprooting of thousands of people from their homes while businesses, public transport and farming were ground to a halt. The terror incidences in Lamu caused the deployment of Kenya Defence Forces to Somalia and along the Kenya-Somalia borders and Ocean. It also necessitated a joint security operation being carried out by the Kenya Defence Forces (KDF), the National Police Service, the National Intelligence Service (NIS) and other State security agencies to restore peace and security within Lamu County. The security campaign was concentrated in Boni Forest, which traverses the Kenya-Somalia border but extended to Bodhei, Pandanguo, Witu, Pangani and surrounding areas.

Insecurity in Lamu has led to foreign countries issuing travel advisories against tourist travel to the County. This resulted in drastically low tourist turnout in the County whose economy was largely dependent on tourism and caused close down of hotels and restaurants resulting in job losses, loss of business for local communities relying on tourism and poor market for the agricultural and fishing communities.

Security operations undertaken in Lamu has affected the livelihood of the hunting & gathering communities as their subsistence is considered highly suspicious and activity movements of persons are also limited as they can be mistaken for parties involved in the conflict. This has resulted in Aweer and Dahalo communities being forced out of protected forest ecosystems and limiting their access to their livelihoods. The insecurity situation also affects the Pastoralist communities as the existence of many herders in most parts of Lamu, particularly Pangani, Mkunumbi and Witu areas seemed to have contributed to insecurity in the County. The National Government ordered pastoralists from neighbouring counties of Tana River and Garissa to return to their homes to pave way for the security operation in Pangani, Mkunumbi and Witu.

Insecurity in Somalia has also affected the fishermen communities of Lamu, due to fishing restrictions as a result of insecurity in Somali

waters. Kenyan traders are forced to buy fish in Kiunga from Somali fishermen based in Ras kamboni as Kenyan fishermen are not adequately fishing.

Access to Justice

Indigenous communities in Lamu have a challenging access to justice especially in bringing their grievances and claims to courts of law. There is inadequate state administration, including courts, in their areas and are forced to travel long distances to access justice systems. Furthermore, the cost of legal proceedings is extremely high by the income standards of indigenous peoples and entails great sacrifices from the indigenous plaintiffs even on instances they get pro bono lawyer services.

Poverty

Lamu, is among five counties that lead in the poverty index in Kenya, with its community members experiencing problems of low income, expenditure and immense inequality. These counties are the poorest in terms of general poverty, income disparity, access to education, sanitation, water, lighting and housing. The ratio of expenditure by the wealthiest to the poorest is 20 to 1 in Lamu County meaning that those in the top ten percentage have 20 times as much expenditure as those in the bottom ten percentage. This is compared to an average for Kenya of nine to one. This bad situation is exacerbated as livelihoods are not promoted to boost the economic welfare of communities. In the Tana Delta, for example, small-scale farming and fishing no longer provide sufficient food or income to people and the absolute poverty rate (76.9%) is significantly higher than the national average (46%).

Provision of Basic Services

There is insufficient and disproportionate provision of civic services and utilities in Lamu with Bahari, Hongwe, Mkomani and Witu wards seemingly well provided compared to Faza, Kiunga and Basuba wards. The settler agricultural community are seen to be enjoying better facilities compared to local indigenous communities who lack adequate facilities to enhance their livelihoods such as motorable roads, public transport, adequate fishing gear, electricity supply, piped water, and health facilities.

Poor service provision among indigenous Lamu communities may be brought about by their dispersed Settlement pattern of clustered villages which does not encourage effective service provision as it becomes very costly.

Poor Administrative and Political Representation

The Indigenous hunting and gathering communities have complained about their invisibility and lack of recognition at the administrative and political level and indeed there is no meaningful participation of these indigenous communities in civil service and public office. The indigenous communities also exhibit high illiteracy levels manily due to Community and cultural beliefs and this has led to poor governance of the indigenous communities. This, together with their limited participation in politics at both local and national level, translates into a weak voice in public decision-making, including inadequate consideration in development projects and lack of access to important resources such as the substantial Constituency Development Funds (CDFs), administered by local MPs. There is need for affirmative action to ensure indigenous hunting and gathering communities' peoples are provided with opportunities for greater participation in decisionmaking processes relevant to their situation. The NCIC audit of the Civil Service shows the prevalence of discrimination against indigenous peoples.

Lack of Identity and Discrimination

Indigenous communities in Lamu also suffer discrimination and marginalization because of their way of life, which is seen as primitive especially for the Hunter-gatherer and fishing communities as well as violent and lawless for the pastoralist communities. Members of these communities, continue to face difficulties in obtaining recognition and accessing citizenship rights and their inherent freedoms, particularly ID cards and still feel discriminated and increasingly harassed.

The situation of indigenous women

Most of the indigenous communities in Lamu are highly patriarchal and traditional and although women's status and role may vary according to age, most indigenous women enjoy few rights as many traditional customs discriminate directly against the girl child and

women in general. Indigenous women in these communities have many chores that are physically demanding despite often having many children and being responsible for obtaining food for all household members, while also working outside their homes. In most of these communities, the girl child is often denied the right to education, and thus illiteracy is prevalent among indigenous women. Most indigenous women have little access to healthcare and their mortality rate is high. Furthermore, Female Genital Mutilation (FGM), usually related to early marriages, remains widespread within the indigenous communities.

Enabling legislation

The Kenyan constitution and laws recognize community rights over areas they live and draw their livelihood. The Constitution in section 204, through the Equalisation Fund requires provision of basic services including water, roads, health facilities and electricity to marginalised areas to bring the quality of those services in those areas to the level generally enjoyed by the rest of Kenya. The Forest Act also recognizes forest communities 'rights to continue to use the forest produce customarily taken from the forest, as long as these products are not to be sold on.

The act recommends empowering local communities to take an active role in forest management by registering as Community Forest Associations (CFA) and developing a management Plan. Communities doing so may be granted a number of forest user rights relating to, for instance, the collection of medicinal herbs; harvesting of honey; harvesting of timber or fuel wood; grass harvesting and even grazing. The Environment and Land Court Act (2011) establishes a superior court that will hear and determine disputes relating to the environment and the use and occupation of land. The National Land Commission Act (February 2012) defines the functions and powers of the independent commission which will be tasked with registering land transfers, resolving disputes and ending gender discrimination. The Truth, Justice and Reconciliation Act (2008) that established the commission (TJRC) to probe human rights abuses since independence in 1963, and to assess the perceived economic marginalization of communities and make recommendations on how to address their marginalization.

Policies

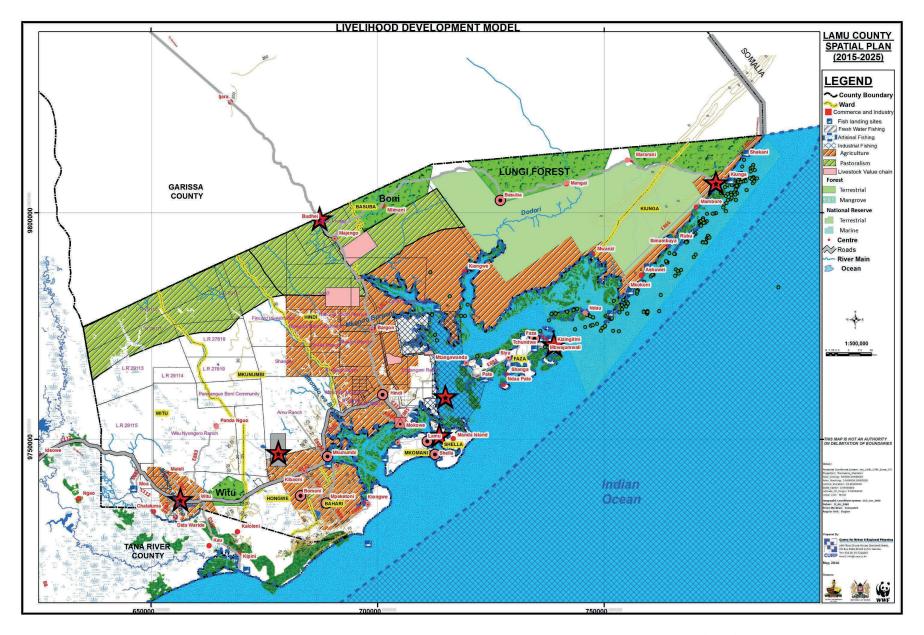
- Ensure equitable sharing of national resources;
- Linking ecotourism and biodiversity conservation with community-based natural resource management (CBNRM) and ensuring a share of benefits;
- Allocate protected natural resource access rights to communities, and controlling utilization of forests, and sensitive terrestrial and marine ecosystems;
- Development of community co-management agreements with KWS and KFS as well as with private sector in utilization of protected natural resources;
- Establish monitoring programs on the impact of development initiatives on marine biodiversity and community livelihoods;
- Empower communities to take charge of their own development processes through capacity building and inclusion in County Government;
- Promote more involvement of the indigenous communities in Government at local, County and national levels;
- Nominate representative of the Aweer and Dahalo communities to the County Assembly of Lamu;
- Promote proper management of devolved funds and reduce the interference of community development projects by political leaders
- Promote community livelihood gained skills/traditional economic activities of the indigenous communities including fishing, boat making, biodiversity conservation, and agriculture
- Promote cultural change to ensure women empowerment among indigenous communities;
- Promote development of designated compact urban centres allowing and protecting traditional community lifestyle of offhomestead farming in the hinterland;
- Promote and safeguard constitutional and legal rights of indigenous communities in Lamu

Actions

 Require conducting of Environmental and Social Impact Assessment (ESIA) on development projects affecting community development requiring effective dissemination of

- information to locals on project intentions, issues and their engagement;
- Require adequate capacity building of indigenous community members ensuring they are beneficiaries by getting proper training to be employed to manage approved development project before their implementation;
- Undertake programmes to educate locals and increasing community awareness on the significance of Lamu being a UNESCO World Heritage Site indicating specific areas of potential investment for the local communities;
- Appoint representatives of the Aweer and Dahalo communities to the Lamu County Executive committee;
- Develop high end five-star tourist hotel in Basuba, Mkomani,
 Shella and Kiunga wards engaging local communities;
- Undertake Training in hospitality industry for the Bajuni, Aweer and Dahalo Community members and engage them in promoting and improve the Tourism industry in Lamu;
- Undertake Training in ranching and wildlife conservation for the Orma, Aweer and Dahalo Community members and engage them in promoting biodiversity conservation in Lamu;
- Undertake training in modern fishing and boat making techniques and provide adequate vessels, fishing gear, fish cold storage facilities and fishing zones and regulations for the Bajuni community and engage them in promoting efficient and profitable fishing and sailing in the Indian Ocean;
- Develop strategies and programmes to ensure diversification of economic activities within Lamu archipelago;
- Educate the Bajuni, Aweer and Dahalo of their indigenous communities' rights and set mechanisms for special protection of these rights;
- Facilitate setting of Community Forest Association (CFA) among the Aweer, Bajuni and Dahalo communities to ensure they are granted forest user rights;
- Source for adequate funds from the County and national Government, private sector and donors for all community development projects;
- Require community co-management of the Boni, Lungi and Witu, Kipini-Nyangoro forests through appropriate incentives, including community tenure security;

- Prepare Integrted Urban Plans for Majengo, Bargoni, Witu, Faza, Kiunga, Mokowe, Pandaguo as urban centres and setting their urban limits allowing and protecting traditional community lifestyle of off-homestead farming in the hinterland;
- Undertake community programmes on structured public participation the indigenous communities in public affairs effectually increasing citizen awareness on devolved system of Government;
- Set up an Environment and Land Court in Mokowe and Witu



INSTITUTIONS & GOVERNANCE

Effective and efficient governance relies on planning to provide direction, action areas and coordinated implementation of development for the benefit of all citizens. Planning likewise depends on good governance to provide the support and resources required crowned by responsive politics resonating with planned decisions for it to play its proper role. In the above active citizen involvement is mandatory for responsive planning and decision making.

a) Objective

- To ensure effective governance of the County through coordinated and integrated roles of both public; and private institutions.
- Devolution of functions and services to the lowest units of the county based Co-production for effective and efficient delivery of services
- Establishment of stakeholder groups in the ward to represent the interest of the People
- Capacity building of community leaders for effective representation of the interests of the Community

b) Issues

Diverse Institutions: Lamu County is one of the Counties in Kenya where very key institutions both in the public and private domain have expressed a lot of interest to be enjoined in governance and management of certain key resources in the County. Of importance, these institutions include;

- The Kenya Forest Service Protection of Mangroves
- Kenya Maritime Authority
- Kenya Ports Authority
- Different Marine Ecosystem Specialists including the military
- International organizations such as the World-Wide Fund, among others.

All these institutions are concerned with different roles within the County in the management; and/or protection of certain key resources and pristine ecosystems that are very key to the economic growth of the County.

Devolved Governance: The onset of devolution has seen Counties make remarkable strides in development by establishing different devolved institutions at Ward Levels and below to manage the affairs of the County effectively; Lamu County has not been left behind on this front.

Corruption: Rampant corruption on Government officials in key Government dockets especially on matters related to land was reported as high in all wards within the County.

Decentralization of Institutions: Government institutions such as law courts; and Agricultural extension offices are decentralized and sparsely located within the County. There was an expressed need to locate various Government institutions in various Centres across the ward.

c) Policies

- Promote integrative roles of different Government and private institutions within the County
- Quarterly sharing information on cross cutting roles; projects; or programs of different institutions in the County
- Promote Government supported projects; and programmes within the County to assist the residents in their different community economic engagements.
- Promotion of a public sensitization campaign against drug abuse in the County
- Central government of Kenya and that of Somalia to establish policy and laws relating to planning and management of resources and jurisdictions across national boundaries and ensure security
- Kenya government and those of nationals which come to violate Kenyan water space as recognized by international maritime laws and treaties to resolve such matters by enforcing the laws and treaties governing the blue economy

- Mutual respect, consultation and cooperation among all government agencies in carrying out their mandates within the County of Lamu emphasizing all aspects of coordination (horizontal, and vertical to the Community)
- Formulation of inter-county pacts guided by inter government relations act to plan and implement development across counties
- Institutionalize sector wide approach based on integrative frameworks for implementation of all projects to maximize on synergies for greater public value
- Rationalisations of the County governance structure aimed at elevating the planning ministry above the others and enhance its capacity to plan, and coordinate implementation of projects
- Tripartite collaboration with one vision among the county administration, county assembly and the planning function to enable the transformation of the County
- To enhance the awareness to the county government about the primacy of planning and its contributions to rapid transformation of the County particularly leveraging more funding for implementation of the proposed projects
- Institute a clear process and requirements of development applications and approvals to guide implementation of projects and plans in the County
- Rationalisation of devolution to the lowest unites of the county government for effective and efficient delivery of services in collaboration with other actors

d) Actions

- Set up Agricultural extension offices in Witu; Mpeketoni;
 Faza; and Hindi Towns with at least 10 staff per office
- Initiate a Government funded public sensitization campaign against drug abuse all over the County to be spearheaded by selected youths selected from different wards
- Set up an information sharing digital platform for institutions engaging in rather common roles to enhance efficiency in updating and circulation of the information
- Set up a lower level Court in Witu Ward

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Fisheries and Aquaculture Department



Fishery and Aquaculture Country Profiles The Republic of Kenya



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Source of information

United Nations Geospatial Information Section http://www.un.org/Depts/Cartographic/english/htmain.htm
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Part I Overview and main indicators

Part I of the Fishery and Aquaculture Country Profile is compiled using the most up-to-date information available from the FAO Country briefs and Statistics programmes at the time of publication. The Country Brief and the FAO Fisheries Statistics provided in Part I may, however, have been prepared at different times, which would explain any inconsistencies.

Country brief

Prepared: February 2015

Content provided by FAO

Kenya's fisheries and aquaculture sector contributes approximately 0.54 percent to the country's GDP (2013). Fish consumption has been declining from a modest 6.0 kg/caput in 2000 to 4.5 kg/caput in 2011. The value of fish exports was about USD 62.9 million in 2012, or about 5 times greater than the USD 12.3 million in fish imports. In 2013, around 129 300 people derived their livelihood from fishing and fish farming activities (including 48 300 in inland waters, 13 100 in coastal waters fishing and around 67 900 in fish farming).

Total fishery and aquaculture production in 2013 amounted to 186 700 tonnes, with 83 percent coming from inland capture fisheries (of which Lake Victoria contributed about 90 percent). Catches of Nile perch - the most sought and mainly exported fish species – seriously declined due to overfishing after the 2000 peak at 110 000 tonnes but since 2007 stabilized around an average of 45 000 tonnes per year. Marine capture fisheries produce less than 9 000 tonnes per year, comparatively much less than neighboring countries.

Freshwater aquaculture development in Kenya in the new millennium is remarkable, especially in 2009–2010, making Kenya one of the fast growing major producers in Sub-Saharan Africa. From the annual production of about 1 000 tonnes in 2001–2006, the harvest of farmed fish leaped to over 4 000 tonnes in 2007–2009. In a nationwide fish farming mass campaign launched by government in 2009, the total area of fish ponds was increased from 220 ha to 468 ha by building 7 760 new fish ponds. Together with the improved seed supply and supports covering other aspects, it lead to a hike in farmed fish production reaching 23 501 tonnes in 2013, more than four times of the production in 2009. The main species produced in 2013 was Nile tilapia (75 percent), followed by African catfish, common carp and rainbow trout. Mariculture is not yet practiced commercially, despite its potential demonstrated by trials.

The Government is looking into ways of promoting aquaculture and using cured fish products for food relief programs in order to enhance national food security.

The main issue in the capture fisheries sector is one of overcapacity in Lake Victoria and the symptoms of overexploitation (increasing conflict, overfishing, and falling incomes) that accompany it. This issue is being addressed in cooperation with neighboring countries through the Lake Victoria Fisheries Organization (LVFO), and through the Regional Plan of Action for the Management of Fishing Capacity in Lake Victoria that was agreed in March 2007.

In the marine sector, one issue is the control of foreign flag vessels that are fishing tuna in the Exclusive Economic Zone and where illegal, unreported and unregulated (IUU) fishing is known to occur.

Kenya is Party to the 1982 UN Convention on the Law of the Sea since March 1989 and to the 1995 UN Fish Stocks Agreement since July 2004. Kenya signed the Port State Measures Agreement in November 2010.

Kenya is a Member of the Committee for Inland Fisheries of Africa (CIFA), a founding Member of Aquaculture Network for Africa (ANAF), a Member of the FAO Indian Ocean Tuna Commission (IOTC) and a Member of the FAO South West Indian Ocean Commission for Fisheries (SWIOFC).

Membership in Regional Fishery Bodies

o Committee on Inland Fisheries and Aquaculture of Africa (CIFAA)

- Indian Ocean Tuna Commission (IOTC)
- International Whaling Commission (IWC)
- Lake Victoria Fisheries Organization (LVFO)
- Southwest Indian Ocean Fisheries Commission (SWIOFC)

General geographic and economic indicators

Table 1 - Kenya -General Geographic and Economic Data

		Source	
Inland water area	18 029 km ²	KNBS: www.knbs.or.ke	
Marine water area (including the EEZ)	142 400 km ²		
Shelf area	19 120 km ²	UNEP (1998) **	
Length of continental coastline	640 km	UNEP (1998) **	
GDP at purchaser's value (2014)	KES 5 358 billion USD 61.1 billion*	KNBS: www.knbs.or.ke	
GDP per capita (2014)	KES 124 710 USD 1 422*	KNBS: www.knbs.or.ke	
Agricultural GDP (2014)	KES 1 464 billion USD 16.7 billion* 27.3 % of national GDP	KNBS: www.knbs.or.ke	
Fisheries GDP (2014)	KES 40.4 billion USD 461 million* 0.8 % of national GDP	KNBS: www.knbs.or.ke	

^{*}calculated with UN exchange rate

** UNEP (1998):

http://gridnairobi.unep.org/chm/EAFDocuments/Kenya/Eastern_Africa_Atlas_of_Coastal_Resources_Kenya.pdf

		Source
Country area	$580\ 370\ km^2$	FAOSTAT. 2013
Land area	569 140 km ²	FAOSTAT. 2013
Inland water area	11 230 km ²	Computed. 2013
Population - Est. & Proj.	50.039 millions	FAOSTAT. 2018
Exclusive Economic Zone (EEZ) area	$114\ 337\ km^2$	VLIZ
GDP (current US\$)	87 908 millions	World Bank. 2018
GDP per capita (current US\$)	1 711 US\$	World Bank. 2018

FAO Fisheries statistics

Updated 2016

Part II Narrative

Part II of the Fishery and Aquaculture Country Profile provides supplementary information that is based on national and other sources and that is valid at the time of compilation (see update year above). References to these sources are provided as far as possible.

Production sector

The Republic of Kenya, with a total land surface area of about 580 000km2, sits astride the equator. It is imbued with numerous aquatic resources of immense ecological value indicative of a productive and valuable ecosystem. Its highly geographic and climatic regions cover a portion of the Indian Ocean coastline, swamps, wetlands, a part of Lake Victoria which is the largest freshwater lake in Africa and second largest lake in the world, and many large rivers. Its varied habitats, including the deep oceanic waters, show a rich biological diversity.

A prominent feature of Kenya's rich heritage is its over 600 kilometers of coastline on the Indian Ocean, with productive ecosystems, which play a highly significant role in the economic and social wellbeing of the people. A distinctive seamark of the coastline is the almost continuous fringing coral reef which stretches parallel to the coast. This coastline comprises 12 nautical miles of territorial waters and a 200-nautical mile Exclusive Economic Zone (EEZ) with a total area of 142 400 km2. Kenya has important, well-defined and well-developed marine and freshwater fisheries. The marine fisheries can be classified into two subsectors: the coastal artisanal fishery, and the Exclusive Economic Zone (EEZ) fishery. A basic feature of the coastal fishery is the largely subsistence and artisanal nature of the fishers who operate small craft propelled by wind sails and manual paddles. The EEZ fishery, on the other hand, is characterized by distant-water fishing vessels which exploit target species mainly with purse-seines and long-lines.

The maximum sustainable yield of Kenya's marine and coastal waters is between 150 000 and 300 000 metric tonnes, while the current production level is only about 9 000 metric tonnes per annum. Kenya's portion of the Lake Victoria basin has about 307 fish landing beaches while the marine coastline has 141 fish landing sites. Lake Victoria, which Kenya (6%) shares with neighboring Uganda (43%) and Tanzania (51%), is rich in fish diversity, and of its total fish production), 35% is landed on the Kenyan portion of the lake. The Lake continues to dominate Kenya's fish production, a greater quantity of which is generally derived from inland capture fisheries. The bulk of the total fish landings come from its portion of the lake which, with more than 90% of total national catch, traditionally hosts the country's largest fishery. In 2006 the lake produced 143 900 metric tonnes of fish, while Lake Turkana and coastal and marine waters produced 4 560 metric tonnes and 6 960 metric tonnes respectively. The total marine capture production for 2013 stands at 8 980 tonnes, as against 154 200 tonnes from inland waters for the same period. On a national fish catch contribution level, Lake Victoria produces 92% of total landings; marine capture fisheries, about 4%; inland lakes and rivers, 3%; while aquaculture contributes the remaining 1%. However, the Lake Victoria fishery is currently at risk, as stocks particularly of Nile perch (*Lates niloticus*) and Nile tilapia (*Oreochromis niloticus*), face a great threat of collapse, though the latter species exhibits high natural reproductive capacity under favorable conditions. Three types of fish farming are practiced in Kenya: warm-water fish culture, basically involving Nile tilapia, African catfish and common carp; cold mountain fish culture in which trout is farmed; and coastal salt-water farming which targets various marine species, both fin-and shell-fish. Fish-holding systems in use include earthen or concrete ponds, high density polyethylene (HDPE)-lined earthen ponds, cages, raceways and metal tanks. Kenya's aquaculture potential stands at 1.14 million hectares of farming area with capacity to produce 11 million tonnes of fish worth well over 750 billion Kenyan shillings (about USD 7.3 billion) per annum. Kenya has a thriving recreational fishery, with a large variety of fish species close to shore. It is a preferred destination for sport-fishing tourists who angel, troll and scuba-dive in the country's coastal and deep waters.

Marine sub-sector

Catch profile

The Kenyan coastline is rich in fish species. Species caught in Kenya's marine waters can be categorized as demersal, pelagic, sharks and rays, crustaceans, molluscs and deep sea/big-game fish. Fishing is mainly artisanal, subsistence and inshore. The Kenyan marine waters host a large variety of fish species, including finfishes: pelagics, such as kingfish, barracuda, mullets, queenfish, cavalla jacks, little mackerels, barracudas, milkfish, sailfish, bonitos, tunas, dolphins and mixed pelagics; demersal species, such as rabbitfish, snapper, rock cod, scavenger, parrotfish, sturgeon, unicorn fish, grunter, pouter, blackskin, goatfish, steaker and mixed demersals; crustaceans and invertebrates, such as prawns, lobsters, crabs, and sea-cucumbers, etc; and molluscs, such as squids and octopus. Other fish species exploited in the waters are the parrotfish (*Leptoscarus vaigiensis*), the crown-of-thorns starfish (*Acanthaster planci*), moray eels (Muraenidae), damselfishes (*Abudefduf annulatus*), *A. xanthozonus*), acanthurida (*A. triostegus*), cardinal fish, wrasses, angelfish, scorpion fish, etc.

Other finfish species include emperors, and rock cods. Deeper waters support the pelagic species such as tuna, eels, and mullets.

Factors affecting marine fish landings in Kenya include tides, the monsoon weather pattern, fishing gear and craft, and social and economic considerations. Demersal fish species predominate over pelagics in the catches.

Kenya sits within the rich tuna belt of the West Indian Ocean where about 25% of the world's tuna is harvested. In cognizance of this, the Kenya Marine and Fisheries Research Institute (KMFRI) in 2012 perfected plans to use the esatellite station to identify fishing zones in order to enable fishers increase fish catch.

Landing sites

There were a total of 197 landing sites in Kenya's marine and coastal waters in 2014.

The major fishing areas are the length of Kiunga coastline and Lamu islands in the North, Tana River mouth, Ngwana Bay and Malindi area, including the offshore North Kenya Bank and Shimoni, Vanga, Funzi Island and coral reef areas on the Southern border.

Thirteen major fishing grounds exist in Lamu, including: Dodorori, Faza, Lagoon, , Manda, Matondoni, Pate and Shela.

Major fish landing sites including Kipini, Jetty, Mayungu, Mambrui, Malindi among others are located within the Malindi-Ungwana bay area while landing sites within the Mombasa-Kilifi area include Nyali, Msanakani, Reef, Kenyatta, Marina, Mtwapa, Kanamai Bureni, Vipingo, Kijangwani, Kuruwitu, Kilifi and Watamu. Seven major sites (Chale, Mgwani, Mwanyaza, Mvuleni, Mwaepe, Tradewinds and Tiwi) fall within the Diani-Chale area whilefour major fish landing sites (Vanga, Shimoni Msambweni and Gazi) are situated within the Funzi-Shirazi bay area.

Fishing practices/systems

Different types of gear and craft are deployed by fishers towards the exploitation of the fish resources. The vessels include canoes, motorized boats, sailboat (dhow), outrigger canoe (ngalawa), and open fishing boat (mashuwa). Built to withstand rough seas and open fishing voyages, dhows and 'ngalawas' are equipped with shark net, driftnet and gillnets. Fishing in canoes, on the other hand, employ beach seine, cast-nets, drift long-lines, set gillnets, fish pot and barricade traps.

Major gear used by the artisanal fishers include: gillnets, seine nets, cast-nets, long-lines, hand-lines, spears, 'lema' (basket traps), 'uzio' (barricades) and 'tata' (weir). 'Chachacha', which is a traditional gear used to catch half beaks, is utilized in Vanga.

Kenya's marine fisheries, being mainly artisanal and subsistence, are undertaken mostly from small, non-motorized boats such as outriggers, dhows and planked pirogues. As a result of the obvious limitation in fishing craft technology, fishing effort is mainly constrained within the reef and is hardly undertaken outside the territorial waters.

Gillnets, artisanal seine, hand-lines, trolling lines, trammel net, harpoons, hooked- and pointed-sticks, fence- and basket-traps, and bottom lines are used in the fishery, while pots are used to harvest lobsters in Lamu, Malindi and Kwale areas. Medium-sized trawlers and modern technological fishing equipment including prawn seine, are employed for industrial prawn fishing. Ring nets are also used to exploit offshore fish resources far into the EEZ.

Some 6 500 fishers operated 1 800 artisanal fishing craft in Kenya's marine and coastal waters in 2010. As a result of the nature of these craft, they lack access to offshore and deep-sea fisheries and thus land small catches, in the neighborhood of 7 000 tonnes annually, representing about 4% of the total national fish catch. But while the inshore fishery was exploited by the local artisanal fishers, the offshore distant waters were targeted by Distant Water Fishing Nations (DWFN) with a major focus on the tunas (skipjack, yellowfin and bigeye). Foreign fishing fleet are authorized to operate in Kenya's EEZ in accordance with the Regional and International Agreement and Cooperation provision of the National Oceans and Fisheries Policy which states, *inter alia*, "The Government will continue to grant fishing rights to other distant Water Fishing Nations to fish in its Exclusive Economic Zone (EEZ) taking into account the state of the stock and economic returns".

A total of 2 913 fishing craft were actively used in the marine capture fishery in 2014. Of these, dugout canoes were the most prevalent, accounting for 47.9%; *Dhow* with flat at one end (*Mashua*) 22.1%; *Hori* 10.8%; *Dau* 9%; *Ngalawa*(outrigger boats pointed at one end) 5.7%; *Mtori* 3.1%; Surf and rafts 1.4%.

Main resources

Kenya's marine fisheries can be classified into two subsectors: the coastal artisanal fishery, and the Exclusive Economic Zone (EEZ) fishery. A basic feature of the coastal fishery is the largely subsistence and artisanal nature of the fishers who operate small craft propelled by wind sails and manual paddles. This fishery mainly targets crustaceans, molluscs, rock cod, beche-de-mer, dry shark fins, marine shells, livers and roes and other sea products. The EEZ fishery, on the other hand, is characterized by distant-water fishing vessels which mainly employ purse-seine and long line in the exploitation of tuna.

Kenya's coastal and marine environments show expansive resource diversity. The coast, encompassing both the intertidal and sub-tidal areas, provides finfish and shellfish, both of which are caught inshore and offshore. Of the estimated 19 120km^2 continental shelf area, some 10 994km^2 are considered trawlable.

About 163 reef- and reef-related species from 37 families are known to exist in southern Kenya, some of the most dominant of which are the thumbprint emperor (*Lethrinus harak*), blue marbled parrotfish (*Leptoscarus vaigiensis*), dory snapper (*Lutjanus fulviflemma*), white-spotted rabbit fish (*Siganus sutor*), sky emperor (*Lethrinus mahsena*) and the trumpet emperor (*L. miniatus*).

The maximum sustainable yield of Kenya's marine and coastal waters is estimated at between 150 000 and 300 000 metric tonnes. However, optimal harnessing of these resources is hindered by infrastructural limitations and inappropriate fishing craft and gear. Artisanal fishers mainly restrict their operations to the continental shelf because they are ill-equipped in terms of craft and equipment to fish in the deep sea. Increasingly targeted for their high internal and external market prices are lobsters, crabs and octopus, all of which have also attracted the attention of seafood companies and local businessmen. The crab fishery thrives mainly in Mombasa, Malindi, Kilifi and Watamu, and is very active in Ngomeni-Marereni area, especially during the peak tourist season when the product fetches much higher prices. Lobsters are mostly caught between October and March at the North East Monsoon period. The fishery is attractive to local entrepreneurs who engage the services of skilled diver-fishers for this purpose. In addition to local fishers from around the Kenyan coastline, many migrant fishers from Pemba Island in Tanzania fish lobsters. For the industrial shrimp fishery, the single fishing ground of commercial importance is located in the Ungwa Bay at the mouth of River Tana and is one of East Africa's largest The target shrimp species include *Penaeus indicus, Metapenaeus monoceros, P.monodon, P.semisulcatus and P. japonicas*.

Management applied to main fisheries

Management objectives

In a bid to deter Illegal, Unregulated and Unreported (IUU) fishing, and to better manage the marine and coastal fisheries of Kenya, the Ministry of Fisheries Development has a suite of management objectives and programmes, which include:

- Development and review of fisheries management plans and harvest strategies
- Protection and rehabilitation of critical fish habitats
- Fish harvesting rights administration through fisheries licensing, permitting and partnership agreements
- Monitoring fishing performance through an elaborate fisheries statistics programme including sample-based survey, frame survey and administrative data sources
- Protection of endangered, threatened and protected marine species from fishing activities such as turtles, marine mammals and vulnerable shark species
- Etc.

The shrimp fishery is currently the only sector with a management plan, 'The Prawn Fishery Management Plan, Legal notice 20 of 2010', with management plans for the other fisheries yet to be drawn.

Management measures and institutional arrangements

The Ministry of Fisheries Development manages all capture fishery activities. The management measures currently in place involve monitoring, control and surveillance (MSC), fisheries development, appraisal, improvement, and statistical data collection, etc.

The Ministry has implemented measures to stem overfishing by reducing the number of fishing boats targeting certain species. Highlighting its goal to promote fisheries management best practices, Kenya in 2014 established the 'Agriculture, Fisheries and Food Authority' with objectives including prevention of the collapse of the small-scale fishing subsector.

Inland sub-sector

Kenya has over 580 000 km² total land surface area, of which inland waters cover 13 400 square kilometers. It has many seasonal and perennial rivers, most of which empty into the western Indian Ocean basin. Of these, the two major perennial rivers are Tana River and Sabaki River. Tana River, stretching approximately 850km in length with a catchment area of 95 000km², is the longest river. Its regular replenishment is accomplished by a number of tributaries with headwaters on Mount Kenya. Before draining into the ocean, Tana River forms a branch that gives rise to Tana Delta, which is a complex of tidal creeks, flood plains, coastal lakes and mangrove swamps, all covering an area of about 1 300km². Tana is followed, in length, by the Sabaki River, also known variously in its upland stretches as Athi and Galana, with a total length of 650km and a catchment area of 70 000km². Semi-perennial and seasonal rivers, such as the Mwache, Kombeni, Tsalu, Nzovuni, Umba, Ramisi ,Mwachema and Voi, all empty into the Indian Ocean coast. And of small streams are Mto Mkuu, Tsalu, Sinawe, Kombeni, etc.

A number of lakes are found in the Kenya coastal region, especially in the Tana Delta. Lake Bilisa and Lake Shakabobo are two such lakes, oxbow in nature and remnants of the various meanders of River Tana. Some smaller lakes which also harbor fish resources are Ziwa la Chakamba, Ziwa la Taa, Ziwa la Maskiti and Ziwa la Ndovu. And in the Kilimanjaro area are two larger lakes, Jipe and Chala.

However, from the fisheries point of view, the two major natural lakes are Lake Turkana (6 405 km²) and Lake Victoria sector (3 755 km²). The most important of other smaller lakes are Lake Baringo and Lake Naivasha.

Lake Victoria (at 68 000 km², Africa's largest lake, the world's largest tropical lake and the world's second largest freshwater lake is a shared lake with basin countries of Kenya (6%), Uganda (45%) and Tanzania (49%).

Catch profile

predominant freshwater fish species are *Alestes, Bagrus, Barbus*, Black bass, *Clarias, Rastrineobola and Labeo. Others are Haplochromis, Lates niloticus, Momyrus, Protopterus, Schilbe* and *Synodontis*. The rest are tilapias, trout, carps, eels, *Citharinus, Hydrocynus* and *Distichodus niloticus*.

Freshwater fish landings have always been higher than those from the marine waters of Kenya. Lake Victoria (Kenyan portion) has always had the largest fishery, producing about 90% of fish in the country. The lake's total fish production was 143 900 metric tonnes in 2006, 111 370 tonnes in 2008 and 108 900 tonnes in 2009.

Nile perch (*Lates niloticus*) is the basis for Lake Victoria's all-important fishery industry and forms the backbone of the operations of most of the fishers and other artisans and businesspersons who target it for both domestic and export markets. One species of major economic and commercial importance is the ever-ubiquitous diminutive endemic silver cyprinid *Rastrineobola argeantea* (known variously as 'omena', 'mukene' or 'dagaa') which move in huge shoals and are targeted for both human consumption and for animal feed production.

Species most dominant in specific major inland water bodies are as follows:

- Lake Victoria: Alestes, Bagrus, Barbus, Clarias, Rastrineobola, Haplochromis, Labeo, Lates niloticus, Momyrops, Protopterus, Schilbe, Synodontis, and Tilapia.
- Lake Turkana: Black bass, crayfish, and Tilapia zilli.
- Lake Baringo: Tilapia, Protopterus, Clarias and Barbus.
- Tana River Dams: Tilapia, Common carp, Clarias, Barbus, Labeo, eels, and Momyrus.

Landing sites

The Kenya portion of the Lake Victoria basin has about 307 fish landing beaches. The lake's shores of Kisumu, Kisii and Homa Bay are important fish landing sites that handle large quantities of fish. So also are the shores of Lakes Bilisa, Shakababo, Kongolola, Kitumbuini, Dida Warede, Harakisa, Moa and Kenyatta.

Fishing practices/systems

The Lake Victoria fishery is largely artisanal and subsistence, employing mainly gillnets, seine nets, longlines and traps. To date, paddle-powered craft are predominantly in use in the fishery. One commonplace fishing method on the lake is the use of seine nets and light attraction by use of pressure lamps. The silver cyprinid *Rastrineobola argentea*, especially, is caught by light attraction during the night. Trawling is banned in the lake by an act of law. Drift-netting ('tembea') is also often used on the lake.

Main resources

The Kenyan portion of Lake Victoria traditionally has the largest fishery in the country, with a 2006 total fish production of

143 900 tonnes. This catch quantity declined to 111 370 tonnes in 2008, and further to 108 900 tonnes in 2009. The lake's 44 263 fishers operating light and small-scale gear and craft constitute the largest fishing community in Kenya. Lake Naivasha, Lake Baringo, Lake Jipe, Lake Chala and River Tana are other major fisheries in the country. Kenya's part of Lake Victoria hosts a multispecies fishery consisting of both indigenous and introduced species. The endemic species include cichlids and more than 20 genera of non-cichlid species, including Mormyrus, catfish, cyprinids and lungfish. The introduced species include Nile perch and Nile tilapia, both of which substantially contributed in increasing the annual fish production in the 1980s and 1990s. With a high fish species diversity, Lake Victoria hosts between 170 to 350 fish species, the three of most commercial importance of which are the Nile perch (Lates niloticus), the silver cyprinid 'dagaa' or 'omena' (Rastineobola argentea) and the Nile tilapia ('ngege'), all of which have universal occurrence in the lake. In the past few years, these three have constituted about 58 percent, 30 percent and 10 percent respectively of the total fish landed on the lake. The maximum sustainable yield of Nile perch in the Kenyan portion of Lake Victoria has been estimated at 39 200 tonnes while that of 'dagaa' is 86 000 tonnes. The growth of the fishmeal-based animal feeds industry during the past few years has resulted in an unprecedented demand for 'dagaa', the second most commercially dominant fish species in the lake. The Nile perch (Lates niloticus) is the dominant species in the lake and indeed in the entire fisheries of Kenya, and is processed for fillets for both internal and external markets. It is the basis for the lake's fisheries as the most important industry and underpins the artisanal and subsistence lifestyle of the lake's riparian zones. Haplochromis species (locally called 'fulu'), though low in value, is also in abundance in the lake. There was a sharp growth in the Lake Victoria fish production up till 1990 when catch decline set in. This earlier increase in production was probably the result of exponential increase in the Nile perch (Lates niloticus) biomass. Over the past few years, however, there has been a steady decline in fish diversity and harvest as a result of increases in fishing effort, arising from commercialization. The threatening collapse of the Nile perch and Nile tilapia fishery is due to the overexploitation of the fishery, use of illegal gear and especially of small mesh gillnets, and indiscriminate fishing practices and mass-target fishing methods, which have been prevalent in Lake Victoria. Illustratively, the average mesh size of gill net used in the lake to fish Nile perch reduced from 12 inches in 1981 to 6 inches in 1996, and this may have decreased further since then. Consequently, fish production from Lake Victoria plummeted from 200 000 metric tonnes in 1999 to about 114 000 metric tonnes in 2008.

Among the fish species of Lakes Shakababo and Kongolola are *Oreochromis mossambicus* ('Barabara'), *Synodontis zambesiensis* ('Chokolame'), *Mormyrus sp.* ('Pawa'), *Clarias mossambicus* ('Pumi'), *Labeo gregorii* ('Borode'), *Protepterus amphibious* ('Kamongo'), and *Anguilla mossambicus* (Mkunga).

Management applied to main fisheries

The Inland and Riverine Division of the Ministry of Fisheries Development provides for the exploitation, utilization, management, development and conservation of the fisheries resources in Kenya's lakes, rivers and dams. Some strategies which the government applies to ensure sustainable utilization of inland and riverine fishery resources include

- Promotion of co-management of fisheries resources
- Control of fishing effort : Frame survey (fisheries census)-generated surveys are continuous
- Adoption of an ecosystem approach to fisheries management
- Strengthening of enforcement of fisheries legislation
- Enhancement of fish stocks in natural systems

A fisheries co-management system is in place through the establishment of the Beach Management Units (BMUs) which are responsible for fisher-vetting, monitoring, security, marketing and development of landing sites in partnership with the government and other development partners.

The Kenya Bureau of Standards has instituted fish processing quality assurance measures for both internal and external markets. Strict quality control procedures such as the Hazard Analysis Critical Control Point (HACCP) are in force in all fish processing plants to guarantee the quality of Kenya's fish and fish products. International best practices are employed at all stages of fish production, handling, processing, packaging, storage and distribution.

Fishing communities

for such communities.

Aquaculture sub-sector

Aquaculture has great potential in Kenya given its numerous aquatic resources. The country has over 1.14 million hectare potential area suitable for fish farming with capacity to produce over 11 million metric tonnes of fish worth 750 billion Kenya shillings (about USD 7.3 billion).

The Government's promotion of aquaculture in Kenya started in 1921 when the colonial administration introduced trout, common carp and black bass into the country's waters with the original intent of enhancing recreational fishing. Thereafter, cultivation of these species, and later of tilapia and African catfish, commenced.

Tilapia farming expanded rapidly in the 1960s as a result of the Government's promotion of rural fish farming through the "Eat More Fish" campaign which gave birth to several small ponds, especially in the Central and Western provinces. However, because of insufficient extension services, shortage of quality fish seed, and poor technical skills especially amongst extension personnel, the number of productive ponds decreased sharply in the 1970s. But it was not until the mid-1990s that a renewed interest in fish farming developed as a result of the renovation of many government fish farms, intensive training of fisheries extension workers and establishment of research programmes.

Under the two phases of the government's Fish Farming Enterprise and Productivity Programme (FFEPP) of between 2008 and 2011, a total of 3.84 billion Kenya shillings (USD 37.3 million) were allocated for the construction of a total number of 28 200 fish ponds in 160 constituencies, 3 shallow wells in each constituency, construction of 80 mini fish processing and storage plants, purchase of pond liners, fish seed and supplementary feed.

Kenya's aquaculture systems straddle the spectrum from small-scale extensive (non-commercial) to intensive polyculture of Nile tilapia and African catfish in earthen ponds, tanks, raceway and cage, and of monoculture of rainbow trout. Fish farming is practiced in all Kenyan provinces except the North-Eastern Province and Nairobi area.

Aquaculture has recorded tremendous growth in Kenya in recent years. This growth is evidenced by the high demand for supplementary feed and seeds of Nile tilapia and African catfish, and has occurred as a result of growth in hatcheries and financial investment in the sector. The country's aquaculture production nearly doubled between 2010 and 2012 from 12 000 metric tonnes to about 22 000 metric tonnes, according to the National Aquaculture Research Development and Training Centre. This is so probably as a result of corresponding growth in hatcheries, and human and capital investments in the sector.

Seeking to further boost total fish production to 11 million tonnes in view of the dwindling fish stocks in lakes and other water bodies, the Kenyan Government started shifting focus to fish farming in order to increase food security and boost public revenue.

Aquaculture in Kenya can be categorized into two categories, thus:

- Marine aquaculture and
- Fresh water culture

Though Kenya has a long coastline which borders the Indian Ocean, and therefore has great potential for mariculture, this is yet to translate into much development as the resources remain largely unused. Kenya's mariculture activity has for some time now consisted of the traditional brackish water ponds and artisanal shrimp and oyster culture, while some measure of intensive shrimp culture is practiced along the coast. By 1998 intensive shrimp cultivation had been under experimentation, just as there was an experimental oyster farm at Gazi. Indeed, potential for oyster farming exists on most of the coastline, even as there is possibility of exploiting marine algae as a crucial protein source.

Three types of marine fish farming activity could be achieved on the Kenyan coastline, viz, (i) pond culture in cleared mangroves or on land behind the mangroves; (ii) suspension culture (cage and raft) in sheltered waterways of adequate depth; and (iii) rack culture in the shallow intertidal zones.

Fresh water aquaculture dominates fish farming in Kenya and may be classified into:

- Coldwater culture, involving the cultivation of rainbow trout (Oncorhynchus mykiss) in highland areas, and
- Warm water culture, involving the cultivation of *Tilapine* fishes, the African catfish (*Clarias gariepinus*), common carp (*Cyprinus carpio*) and a variety of ornamental fishes in low land regions of the country

Freshwater culture systems available in Kenya include semi-intensive cultivation of Nile tilapia (*Oreochromis niloticus*) and African catfish (*Clarias gariepinus*) in static, earthen ponds; and intensive culture of trout in raceways. Tilapia and catfish, being warm-water species, are cultured in the tropical freshwater agro-climatic zone while trout, being an introduced cold water fish, performs well in the cooler waters of high altitude regions.

In 2009 Kenya had a total of 6 328 fish farmers who farmed on 9 116 earthen ponds covering a total of 275.37 hectares. These figures showed a remarkable improvement from the previous year's total of 4 742 who worked on 7 530 ponds totaling an area of 227.79 ha. In 2009, 331 dams with an area of 547 hectares and 161 tanks/races with a total area of 2.3 hectares were also farmed. The gross total land area used for aquaculture in 2009, therefore, was about 825 hectares, as compared to 728 hectares used the previous year.

A total aquaculture production of 4 890 tonnes was recorded in 2009, of which the bulk (3 424 tonnes, representing nearly 70% was of tilapia species. This was followed by Clarias (1 047 tonnes), Common Carp (373 tonnes) and trout (51 tonnes). Black bass, Koi carp and Goldfish were also cultivated, though on a very small scale.

The increase in land area placed under water for fish farming is most likely a direct result of the Government's Economic Stimulus Programme (ESP) of the 2009/2010 Financial Year. The increase could also be attributable to the displacement of subsistence fish farmers with smallholder ponds by emergent commercial fish farmers owning larger ponds with consequent higher yields. Under the Programme aimed at improving nutrition and creating over 120 000 employment and income-generating opportunities, over 40 000 fish ponds have been constructed in 140 constituencies at an estimated cost of 1.12 billion Kenya shillings (USD 10.88 million). The Economic Stimulus Programme resulted in substantial increase in aquaculture production between 2010 and 2013.

The Government of Kenya has since 2002 introduced measures to boost the aquaculture industry as a strategy to compensate for the declining stocks from capture fisheries. Government aquaculture facilities include the Sagana Fish Farm (for warm water species), the Kiganjo Trout Farm (for cold water species) and the Ngomeini Prawn Farm (a pilot mariculture project). In the year 2009, Sagana Aquaculture Centre produced 448 359 fingerlings of Tilapia, Catfish, Goldfish and Swordfish while Kiganjo Trout Hatchery produced 53 993 fingerlings.

As at the year 2013 the government had constructed over 3 000 fish ponds all over the country under its Economic Stimulus Programme. Most of those ponds have, however, performed below expectations as a result of factors including inadequacy and high cost of inputs, and lack of technical expertise.

More information at: National Aquaculture Sector Overview (NASO)

Recreational sub-sector

Kenya is reputed for some of the best deep-sea fishing in the world. Shimoni, Watamu, Mombasa, Pemba, and Lake Victoria offer recreational fishing opportunities with a large variety of fish species close to shore.

Pemba Channel and Lake Victoria are among the finest sport-fishing places. Also at Heming ways off Malindi Island, twin-engine deep-water fishing boats take recreational fishers to fish billfish in its November – March prime season, even as sailfish (known locally as 'suli suli') and Marlin (striped, blue, and black) often move inshore in shoals in the month of August.

Fishing off the coast of Kenya is governed by the twin monsoons: 'Kusi' (Southeast Monsoon) blowing from late March until November, and 'Kaskazi' (Northeast Monsoon) which starts mid-December. Most visiting anglers to Kenyan waters target sailfish while the marlin, bonito, skipjack tuna, shortbill spearfish and broadbill swordfish are also target sport species.

The months of April – August make up the best sport-fishing period, the weather being inclement the rest of the year. Offshore boats mainly use hook and line, while in shore-based recreational fishing, trolling, drifting and spinning are employed.

All along Kenya's coastline are living coral reefs which occur as coral flats, lagoons, reef platforms and as a fringing reef colonizing the shallow parts of the continental shelf, save in locations where river inflow creates conditions of low salinity and high turbidity which inhibit coral growth. These have an immense value in attracting tourists. The coastline and the coastal lakes, as well as being important sources of fish protein, are also important for recreational activities.

In 1968 Kenya pioneered the establishment of marine protected areas in Africa. These areas were created to conserve coral reefs which run along most of the country's coast and which form a biodiversity hotspot second only to the tropical rainforests. There are four Marine National Parks, at Malindi, Watamu, Kisite and Mombasa, with a total area of 54km². Also, there are five Marine National Reserves, located at Malindi, Watamu, Mpunguti, Mombasa and Kiunga, with a total area of 706km². While fishing is totally prohibited in the Parks, fishing using traditional methods is permitted within the boundaries of the reserves.

The Malindi-Watamu area presents the best known reefs and is part of the Marine National Reserves and the Marine National Parks, the latter of which are a complex of fringing reef, channels, islands, offshore reefs, sand, clays, seagrass meadows and isolated coral heads. The whole area of the National Reserves and the National Parks are designated as a Biosphere Reserve. Some fish groups usually associated with corals and are found here include the parrot fish (*Leptoscarius vaigiensis*), the crown-of-thorns starfish (*Acanthaster planci*), moray eels (*Muraenidae*), damselfishes (*Abudefduf annulatus*, *A. xanthozanus*), acanthurida (*A.triostegus*), cardinal fish, wrasses, angelfish, scorpion fish, etc.

Post-harvest sector

Fish utilization

Until about 35 years ago, almost all fish caught in Kenyan waters was consumed fresh locally. The first fish processing factories were set up around Lake Victoria in early 1980s, thus paving the way for fish export the same period. Over the past 35 years, therefore, the fishing industry has gradually evolved from a domestic consumption-oriented industry to an export-oriented industry with value-added processing being applied. The Lake Victoria fishery has undergone tremendous commercial transformation over the years and is now dominated by fish-processing plants funded by international agencies which aim at promoting fish export to developed countries.

Post-capture, fresh fish is transported by fishers using fishing vessels. At landing sites, the fish destined for industrial processing is packed into refrigerated trucks and moved to the processing factory. While most of the export fish is freighted by air in specially-designed containers, the negligible proportion meant for local consumption ends up in supermarket chains via road transportation.

The domestic-market fish is usually packed in ice placed in polythene bags and then heaped in traditional baskets for transportation. Overnight transport systems are more often than not used to convey such fish to Nairobi and Mombasa. Lobsters are usually kept alive until transportation to either the external market or by road to the local market of Malindi, Kilifi, Mombasa or Nairobi. Processed fish, including sundried Nile perch, tilapia and 'dagaa', as well as deep-fried Nile perch are transported by road to various internal urban markets.

Fish meant for the domestic market is sold fresh, dried or processed for consumption. The excellent physico-chemical qualities of the Nile perch render its fillets, either chilled or frozen, to tremendous commercial interest. Its by-products of skin and scales also key into an important industry dealing on these and other by-products.

Kenya has implemented the European Union quality standards for all fish products destined for the international market. Kenya has 25 fish processing plants with a total capacity of 25 tonnes a year. Upon landing *Rastrineobola argentea* (dagaa,

omena, mukene) are sold fresh and traditionally spread out on grass, old nets, mats, or in some places, on modern elevated racks, for drying in the sun. This process usually takes between one and three days, depending on the weather, during which period the fish are occasionally turned for uniformity. But because better catches are made during the rainy season, sun-drying often results in low-quality dried products. During rainfall, the fish are either taken indoors or covered in the drying site with tarpaulin or plastic sheeting. Post-drying, the fish are packed in sacks for transportation to the market. The premium quality products attract a higher market price and are targeted at human consumption while the lower-quality products are sold for chicken feed.

Prime marine sector products include bigeye, cuttlefish, fish oil, lobsters, octopus, prawns, sharks and shark fins, swordfish, tuna loins and canned tuna, all of which are targeted at both the local and international markets. Wanachi Marine Ltd, Shimko, Trans Africa and Sea Harvest are the major tuna processing factories in Kenya that export tuna loins to the European Union market.

In 2012 the Kenyan government invested 240 million Kenya shillings (USD 2.3 million) in building four fish cold storage plants at Rongo, Imenti, Tetu and Lurambi. This was meant to accord fish farmers storage facilities for their products prior to marketing.

Fish markets

Kenya's fish market structure classifies traders according to their target market: internal or international market. For the local market, fish is largely sold fresh while the external market involves high quality standards during handling, processing and storage of Nile perch fillets, prawns, octopus, cuttlefish and lobsters. Export markets are usually the EU countries of Italy, the Netherlands, Germany, Belgium, Portugal, Spain, Cyprus, Malta, France and Poland; the Far East countries of Japan, Hong Kong, Singapore, Malaysia and China; the Middle East countries of Israel with a high demand for Nile perch and, to a much lesser extent, the United Arab Emirates (UAE). The United States of America (USA), Venezuela, Colombia and Cuba also import some quantities of Kenyan fish, just as some unverified but negligible amounts are exported to neighboring African countries.

A total of 18 506 tonnes of Kenya's fish and fish products were exported in 2009. Fish and fish products exported included Nile perch fillets, fish maws, octopus, sharks, swordfish, crabs and fish skins. Export of Nile perch accounted for 87.4% of total fish exports and 84.73% of the total fish export earnings. Export of fish maws took 5.6% of total export quantity and 11.3% of total monetary value, while octopus contributed 2.4% in quantity and 3.2% of monetary value. Accounting for 4 420 tonnes, representing 45% of the total Nile perch exports, Israel was the preferred country of destination for this species.

Nile perch is the most exportable species from the Kenyan waters. Nairobi is the largest domestic fish market and remains the preferred destination for fish landed at Lake Victoria, Naivasha, the marine coastline and even Tana River Dams. Gikomba and City Markets are the main fish markets in Nairobi. Central and Eastern Provinces are two other important domestic markets; they buy fish from the Tana River Dam fish farmers. Fish from Lake Tukana, Naivasha and even Lake Victoria also often are destined for the markets of the Rift Valley Province.

Socio-economic contribution of the fishery sector

Role of fisheries in the national economy

The fishery resources of Kenya contribute to the national economy through foreign exchange earnings, employment generation, food security support and rural development. Of Kenya's 2014 estimated population of 44.9 million, the fisheries sector provides employment to 2 million and livelihood for at least 2.3 millionpeople. The sector also brings in valuable foreign exchange to the government, earning some 0.5% of the Gross Domestic Product per annum.

Further, the thriving tourism industry based on the coral reefs in the important fishing ports of Malindi and Lamu in the Lamu Archipelago attracts revenue to the economy. There are currently over 1.6 million tourists visiting Kenya every year an appreciable percentage of whom are attracted by the recreational fishing.

Trade

The Nile perch is the most commercially- important species in the export trade, contributing about 90 percent in both volume and monetary value of Kenya's total fish exports. Exportable Nile perch products include the fillet, fish maws, and the gutted, headless whole fish. Marine fish products such as crustaceans (prawns, lobsters and crabs), molluscs (octopus and squid) are also exported, just as other marine fish, freshwater crayfish, and small quantities of live ornamental fish are destined for the international markets.

International fish trade started in the early 1980s with the establishment of the Nile perch processing industry.

Kenya's total fish export for 2007, 2008 and 2009 were 31 376 tonnes, 29 575 tonnes and 18 506 tonnes respectively, representing 13.4%, 13.3% and 7.8% of total annual catch, leaving between 70% and over 90% for local consumption within these periods.

Food security

A significant proportion of Kenya's total fish catch caters to the protein needs of the local population. In 2007, 2008 and 2009, 86.6%, 86.7% and 92.2% of all fish caught from Kenyan waters were left for domestic consumption, thus contributing to the food security of the people. Kenya's per capita fish consumption was placed at 5kg in 2011, and remained the same in 2014.

The contribution of fish to overall protein intake is low at 7.6% and this is attributable to the fact that many Kenyans do not regularly consume fish for historical or cultural reasons. However, Kenya's fishing communities depend heavily on fish as a rich source of protein.

Engaging largely in subsistence fishing, fishers usually take part of their catch to their families, friends and relatives for food. This proportion of the catch is locally known as *kitoweo*. However, the prevailing decline of Lake Victoria's natural fish stocks directly threatens food security and income for livelihoods of lakeside communities.

Employment

The fisheries sector generates employment for more than 2 000 000 Kenyans through fishing, gear and craft repair, fish processing and distribution, and other related activities.

As at 2008, 80 000 people were directly engaged as fishers and fish farmers while the sector provided livelihoods for about 2.3 million Kenyans mainly involved in fish processing and trade.

A total of 41 912 fishers were actively engaged in the Kenyan fisheries in 2010, while in 2011 capture fishery directly employed 62 232 fishers. And in 2014, a total of 12 915 fishers participated actively in the marine capture fishery alone.

Rural development

Fisheries and aquaculture play a significant role in the development and stabilization of Kenya's rural communities, both coastal and riparian. The combined sector provides employment and income to large numbers of men and women, and food and social cohesion to entire families.

The most important industry in the riparian districts of Lake Victoria is arguably fisheries, with all its ramifications of fish capturing, processing, marketing, distribution and other ancillary services. This industry, whose basis is the all-ubiquitous Nile perch, underpins the artisanal and subsistence lifestyle of the region.

Communities living along Kenya's lakes and coastline benefit further in terms of food security, as small-scale fishing is essential to their overall household wellbeing, providing both income and nutrient-rich food.

Trends, issues and development

Constraints and opportunities

Factors which significantly diminish fish and coral productivity, species richness and diversity of the entire Kenya coastline are silt deposition from rivers draining agricultural land, industrial and domestic effluents, and discharges from tanker traffic. Reefs from outside the designated marine reserves are often degraded and unknown quantities of shells and corals are often harvested from Shimoni, Lamu and Kiunga areas.

Though Kenya's EEZ straddles the considerably rich tuna belt of the South West Indian Ocean (SWIO), exploitation of the resources is hampered by infrastructural limitations and inappropriate fishing craft and equipment. Artisanal fishers largely restrict their operations to the continental shelf because they are not well-equipped in terms of gear and craft to fish in the deep sea.

Lack of monitoring and surveillance capacity is the main cause of illegal fishing in Kenya's distant waters. Small-scale migrant fishers from Tanzania also come from the south during the north-east monsoon and target very valuable species such as sharks, Carangidae, Lethrinidae and Siganidae.

Kenya lacks capacity to monitor the activities of the distant-water fishing fleet operating within its EEZ. Its nationally registered fishing fleet operating in its deep-waters is small, and as a result of this and other lapses, distant-water fishing fleet operating within its EEZ land more than 20 000 tonnes outside the country.

Government and non-government sector policies and development strategies

Kenya's 2014-2017 National Nutrition Action Plan recognizes fisheries as one of the major sectors that contribute to the goals of the national nutrition agenda. Also, Vision 2030, its long-term development blueprint, recognizes the contributions of the fisheries sector towards transforming the country into an industrializing middle-income nation.

The Government of Kenya has launched its first ever Tuna Fisheries Development and Management Strategy, thereby upping its stake in the USD 4 billon global tuna fisheries industry. The Strategy which runs from 2013 to 2018 would build effective governance system of the marine fisheries sector by providing institutional framework to ensure compliance with relevant national laws and international standards and agreements. It aims to grow the country's largely underdeveloped tuna supply chain that has rudimentary fishing vessels not capable of going beyond 20 nautical miles in undertaking tuna fishing. By so doing, Kenya's tuna fishery would transform into productive and sustainable modern, commercially-oriented coastal and oceanic fisheries with direct positive impacts on employment, wealth creation, improved outcomes and foreign exchange earnings.

The Kenyan Government and the FAO (Food and Agriculture Organization of the United Nations) have in place the Blue Growth Initiative (BGI), which is aimed at helping select areas of the coastal region to develop fisheries and aquaculture. The Initiative is a FAO flagship strategy with the objective of promoting more productive, sustainable and

socioeconomically responsible fisheries and aquaculture. BGI, in Kenya's case, aims to address mariculture which is presently lagging behind the freshwater culture system, and is to be implemented through the Ecosystem Approach to Aquaculture (EAA). In this respect, FAO has developed two projects worth a total of USD 1 million, namely "In Support of Food Security and Nutrition, Poverty Alleviation and Healthy Oceans" and "In Support of Implementation of Mariculture in Kenya Within an Ecosystems Approach".

Research, education and training

Research

Kenya's Marine and Fisheries Research Institute (KMFRI) is the State Corporation dedicated to conducting research, covering all the Kenyan waters and the riparian areas including Kenya's EEZ in the Indian Ocean.

KMFRI and the Wildlife Conservation Society (WCS) recently developed a new basket fish trap with escape gaps to reduce fish by-catch by allowing juvenile and non-target fish species to escape while increasing income. By enabling more undersized fish to escape, the traps minimize the impact of fishing on coastal reef systems and help fishing communities boost profits. The major Government Aquaculture Research Institutions are:

- Sagana Fish Farm at Sagana, Kirinyaga District, Central Province.
- Kiganjo Trout Farm at Sagana, Nyeri District, Central Province.
- Moi University, Department of Fisheries, Eldoret, Uasin Gishu District, Rift Valley Province.
- Kenya Marine and Fisheries Research Institute, Mombasa District, Coast Province.

Various Kenyan universities which offer degrees in fisheries and allied fields also conduct research in fisheries.

Education and training

Below are some Kenyan universities that offer academic programmes in fisheries and related fields

S/No.	University	Undergraduate Programme	Graduate Programme	Reference
1.	University of Nairobi	B.Sc. Fisheries and Aquaculture	M.Sc. Fish Science	http://www.uonbi.ac.ke/uon_programmes_type
2.	Kenyatta University		M.Sc. Fisheries Science	http://www.ku.ac.ke/index.php/academics/academic-programmes/masters-programmes-a-z
3	Egerton University	B.Sc. Applied Aquatic Sciences		http://www.egerton.ac.ke/index.php/Summary-of- Programmes/summary-of-programmes.html
4	Maseno University		M.Sc. Aquatic Sciences	http://maseno.ac.ke/index/index.php? option=com_content&view=article&id=114&Itemid=150
5	Technical University of Mombasa	B.Sc. Marine Resource Management		http://www.tum.ac.ke/programmes/degree
6	Pwani University	B.Sc. Marine Biology & Fisheries	PhD Fisheries	http://www.pu.ac.ke/index.php/academics/2015-09-03-06-24-19/undergraduate
7	Kisii	B.Sc. Applied	M.Sc. Fisheries and Aquaculture;	http://www.kisiiuniversity.ac.ke/index.php? option=com_content&view=article&id=117&catid=33&Itemid=101,

	University	Aquanc science	PhD Fisheries and Aquaculture	http://www.kisiiuniversity.ac.ke/index.php? option=com_content&view=article&id=162&catid=34&Itemid=101
8	South- Eastern Kenya University	B.Sc. Fisheries Management & Aquaculture Technology		http://www.seku.ac.ke/index.php/academics/academic-programs
9	Moi University		MSc and PhD Fisheries with option in Aqueuculture	FAO Fisheries and Aquaculture -National Aquaculture Sector Overview -Kenya http://www.fao.org/fishery/countrysector/naso_kenya/en

In addition, the Ramogi Institute of Advanced Technology, Kisumu trains aquaculture professionals and the Kenya Wildlife Training Institute, Naivasha offers a diploma in Aquaculture.

Foreign aid

Kenya is in a key partnership with the Aquaculture and Fisheries Collaborative Research Support Program, known as AquaFish CRSP, funded by the U.S. Agency for International Development (USAID). The Program has been helping improve Kenyan aquaculture since 1997.

Institutional framework

Kenya has a fully-fledged Ministry of Fisheries Development which is the responsible institution for the administration of fisheries and aquaculture, including enforcement of fisheries regulations, collecting and reporting statistics, licensing, fish quality assurance and control of imports and exports, and other related activities.

The Marine National Parks and the Marine National Reserves are all administered by the Kenya Wildlife Service.

The Kenya Fish Processors and Exporters Association (AFIPEK), an assembly of fish industries which have adopted self-regulatory mechanisms to ensure that sustainability is adhered to amongst its member-factories, collaborates with relevant government agencies to foster public recognition and support for the fisheries sector, to promote high quality fish and fish products and to advocate for the effective management of inland marine fish resources.

Other major stakeholders in the fisheries sector are the six franchised aqua-shops located at Funyula, Nambomboto, and Bukiri shopping centres within Samia; and Ahero, Katito and Oboch in Nyakach Districts respectively. These outlets are intended to deliver a wide range of affordable fisheries and aquaculture products and services, including the provision of inputs and technical advice.

Legal framework

Regional and international legal framework

Kenya is Party to the Lake Victoria Fisheries Organization (LVFO) formed through a convention which was signed in 1994 by the three East African Community (EAC) Partner States of Kenya, Uganda and Tanzania sharing Lake Victoria. It is also a signatory to many regional and international conventions, protocols and agreements that contain policies and guidelines for management of fisheries resources.

Also, the following Regional Fishery Bodies operate in Kenya:

- The Indian Ocean Tuna Commission (IOTC)
- The South West Indian Ocean Fisheries Commission (SWIOFC), and
- The Indian Ocean Commission (IOC)

In addition, the Common Market for Eastern and Southern Africa (COMESA) to which Kenya belongs has a strategy on fisheries.

The major statutes that regulate and govern all fisheries activities in Kenya include the Fisheries Act (Cap 378) of 1989, and the Fisheries Regulation (1991). However, a new Fisheries Bill is in Parliament awaiting passage The National Oceans and Fisheries Policy (2008) articulates comprehensive policy statements and guidelines for fisheries regulations.

More information at: FAOLEX legislative database

Annexes





Figure 13 - Kenya - Maps showing major water bodies, reserves, parks, etc

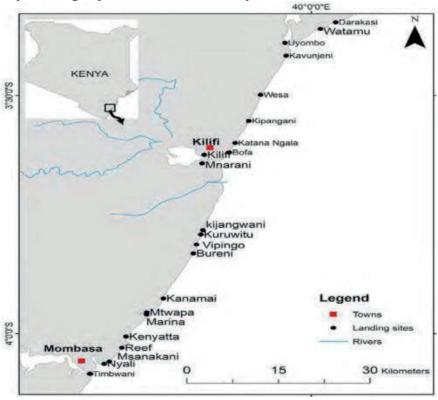


Figure 14 – Kenya – Map showing fish landing sites and other coastal features within the North Coast. (Source: Mbaru, Emmanuel Kakunde. Rhodes University (2012). An Assessment of the Kenyan Coastal Artisanal Fishery and Implications for the Introduction of FADs. M.Sc. thesis. http://www.oceandocs.org/bitstream/handle/1834/6844/ktf0252.pdf? sequence=1

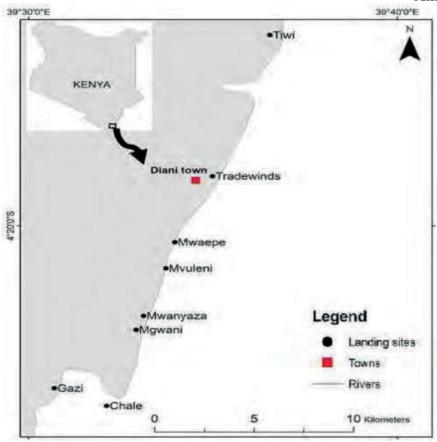


Figure 15 – Kenya – Map showing fish landing sites and other coastal features. (Source: Mbaru, Emmanuel Kakunde. Rhodes University (2012). An Assessment of the Kenyan Coastal Artisanal Fishery and Implications for the Introduction of FADs. M.Sc. thesis. http://www.oceandocs.org/bitstream/handle/1834/6844/ktf0252.pdf?sequence=1

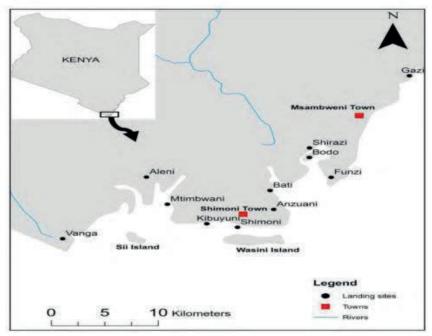


Figure 16 – Kenya – Map showing fish landing sites and other coastal features (Source:) Mbaru, Emmanuel Kakunde. Rhodes University (2012). An Assessment of the Kenyan Coastal Artisanal Fishery and Implications for the Introduction of FADs. M.Sc. thesis. http://www.oceandocs.org/bitstream/handle/1834/6844/ktf0252.pdf?sequence=1

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Heddon S, The Constraints of the Artisanal Fishing Industry in the Lamu District, 2006 (Extracts)

The Constraints of the Artisanal Fishing Industry in Lamu District

Sarah Heddon School of International Training and Tawasal Institute Academic Director: Athman Lali Spring 2006 "And he it is who has subjected the sea that you eat there of fresh tender meat and that you bring forth out of it ornaments to wear. And you see the ships plowing through it, that you may seek of his bounty and that you may be grateful."

SURAT ANNAHL AYA 16 NAMBA YA SURA 16

"If you give a man a fish, he'll eat for a day. If you teach him how to fish, he'll eat for a lifetime."-Chinese Proverb

"Our shamba is the sea and we don't like people playing with it." Ahamed Shiek Ahamed

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Abstract:

This proposal explores the challenges of the artisanal fishing industry along the northern coast of Kenya in hopes of generating community informed recommendations for transforming and revitalizing the industry. This proposal is written in hopes of empowering Lamu coastal communities to capitalize on their own resources.

In general, along the Kenyan coast, inshore marine productivity is declining. Fisheries data confirms a declining trend over the past 10 years, with daily fish catch declining from an average of 50 kilos per fisherman per day to 10 kilos per day to sometimes no catch at all. Local fishermen confirm the declining productivity and acknowledge the increasing population of participants in the industry. This has perpetuated the decline of the inshore environmental and economic resources.

Contributing to the perplexity of the situation, offshore marine resources are abundant and vastly underdeveloped. But local fishermen are disempowered and unable to develop these vast offshore coastal marine resources that have been largely underutilized. They lack adequate equipment—boats, engines and nets, the ability to preserve and process their products and the basic infrastructure to successfully market their catch in national or international markets. Fishermen and dealers lack the educational and management resources to effectively organize themselves in order to sustain and remain in control of what could be a profitable industry. Under current circumstances, subsistence inshore fishing drives a cycle of poverty along the coast that inhibits the development of a sustainable fishing economy.

In addition, the coastal fishing industry has been largely neglected by national and international investors and by the Kenyan government as a whole. This proposal seeks to challenge this and recommend ways in which Kenya's artisanal fishing industry can be transformed to not only empower coastal communities, but to contribute significantly to the growth of Kenya's national economy as a whole. This proposal seeks to identify ways in which the artisanal fishing industry can be sustained and driven from within coastal communities, giving them the resources and education to effectively improve their lives.

Objectives:

- To appreciate and understand the difficulties and challenges hindering the artisanal fishing industry along the coast through community input, feedback and sentiments.
- 2. To understand how the community perceives proposed solutions and recommendations for the revitalization of the industry, so change is driving from within.
- 3. To utilize community sentiment in requesting funding to bring more sustainable technology and fishing techniques to the Lamu community and the surrounding areas.
- 4. To highlight the industry's potential in the context of the vast, underexploited offshore marine resource.
- 5. To use this study as a tool in alleviating poverty by creating a more sustainable fishing industry operated and driven by the people.
- 6. To educate fishermen on environmental conservation and preservation initiatives so that a sustainable, highly productive industry can be created and maintained.
- 7. To educate artisanal fishermen about their rights and opportunities so they are able to gain more control over their resources.
- 8. To unify the industry, which will encourage more investment and development.
- 9. To solicit significant national and international investment needed to develop, improve and increase the coastal economy so that it can adequately contribute to the Kenyan economy as a whole.

Research Methodology:

Although this proposal and study focused on the Lamu district, it has been approached in context of the greater fishing industry along the northern Kenyan coast. The researcher undertook a comprehensive study of the coastal artisanal fishing industry from Mombasa to Lamu focusing on areas of Malindi, Mayungu, Ngomeni, Lamu, Faza, Kizingitini, Kipungani, Matondoni, Mkokoni and Kiwayuu. The researcher worked closely with Kenyan national Department of Fisheries in Mombasa, Malindi and Lamu. Informants included Fisheries Officers, fisherman from all areas, fish dealers, processing plant owners, WWS and KWS officers, BMU leaders, members and leaders of the Malindi Cooperative Society, Lamu East Cooperative Society (Faza and Kizingitini branches), Lamu West Cooperative Society, private business owners, local and foreign, hotel owners and many members of the community. Qualitative and Quantitative field research was conducted through formal and informal interviews, survey methods and through group meetings moderated by the Fisheries Department.

These research methods were employed to generate the maximum amount of community input and to analyze the problems and subsequent recommendations.

Study Significance and Literature Review:

This study is written in the context of several other academic studies and takes into account their findings, recommendations and research methodologies. The researcher has consulted the following works, using them to formulate background knowledge and a perspective of the industry in its current state.

The first study, Constraints on the Fishing Industry in Lamu District: A Case Study, written by Omar Famau, is a descriptive study highlighting the challenges local fishermen face in the context of environmental degradation, tourism and the current status of the Lamu community. The study recommends investment from the national government of Kenya "in providing

environmental management, formation and management of c

ooperatives to enable the fishermen operate and sell their catch at better prices." The study also highlights ways to improve infrastructure in Lamu so that marketability and transport of coastal resources can be revitalized. Finally, the study suggests ways in which loan schemes can be provided to fishermen to allow them to acquire modern fishing equipment, motorized vehicles and cold storage facilities.

Another study influencing this proposal is *The Lamu Artisanal Fishery Industry and its Potential Development* by Athman Lali Omar written in conjunction with Tawasal Institute, Lamu, conducted in March 2005. This report recommends that offshore coastal resources be developed in order to utilize the potential of the industry as a way to stop overexploitation of inshore fishing environments, which is causing a cycle of environmental degradation and declining productivity. This study highlights the positive outlook of the coastal fishing industry and ways the socio-economic position of local, artisanal fishermen can be enhanced. The study also recommends that the governmental regulation and management of the industry be improved, cold storage facilities be introduced and that loan schemes be developed to bring modern, more effective gears to local fishermen who are unable to access this technology independently.

A proposal written by Professor M. Hyder, *Lamu Fishery Industry*, in 1997 in conjunction with the Alliance of Religions and Conservation, highlights many of the same issues. It focuses on developing the industry in ways that maximize productivity, through the transport of products to larger markets. It also suggests ways local fishermen can form their own fisher groups in order to access loan schemes and management facilities.

Similarly, the Coast Development Authority submitted a report that highlighted the challenges of the coastal artisanal fishing industry. It submitted a Symposium Report on Investment Opportunities in Coastal and Marine Fisheries in Kenya in 2004 that emphasized the effects of lack of infrastructure, cold storage, modern equipment, credit facilities and underdeveloped organizational and marketing strategies for coastal fishermen. The purpose of the report was to present the problems and potential ways investment could revitalize the industry.

In addition, Hussein M. Aldina conducted a study, in conjunction with CORDIO, Coral Reef Degradation in the Indian Ocean, *Local Level Fisheries Management in Diani-Chale Kenya: Current Status and Future Directions*, which emphasized fishermen's inability to control and manage their own resources. The study summarized the socioeconomic condition of fishermen, their fear of losing landing sites and the continued disregard for local fishermen's rights. The study recommends ways in which fishermen can be educated and organized so they can maintain more control over their beaches.

Another study that contributed significantly to the context of this study was produced by Kenya Fisheries Marine Research Institute (KENFRI) titled, *The Current Status of Trawl Fishery of Malindi-Ungwana Bay Executive Summary*, published in 2002. It was a four year project conducted with the help of Basta and Sons and East African SeaFood, which are international commercial fishing companies on the Kenyan coast. KENFRI sought to identify the social, environmental and economic impacts of prawn trawling on the local community. KENFRI offered the following recommendations regarding the regulation of trawlers in these areas:

- 1. The elimination of destructive fishing gears
- 2. The elimination of the fishing and landing of juvenile fish

- 3. The demarcation of fishing zones specifically for trawlers in order to protect the nursery grounds of fish
- 4. The development and implementation of adequate Bycatch Reducer Devices to reduce incidental capture of juvenile fish and reduce the quantity of bycatch

Through adoption of these measures, it was determined that trawling is economically and environmentally sustainable only under strict regulation and management. The study also offered ways international trawlers should be monitored in order to minimize the conflict between them and the local industry.

Two other proposals that have significantly informed this study were written by KENFRI about quality improvement for traditionally dried and smoked fish along the coast. The proposals request funds to pursue more effective methods of processing, transporting and hygienically storing fish products. It is written in conjunction with a pilot program on the south coast, which is currently in the test phase. This program aims to improve the current drying and smoking techniques practiced by local communities along the coast.

The proposal highlights the consequences of inadequate infrastructure, lack of cold storage facilities and the general inability of local fishermen along the coast to transport and preserve fresh fish. It illustrates the high prevalence of perishable fish products and proposes strategies to preserve fish and increase quality through new ways of drying and smoking fish. Ultimately, KENFRI proposes investment in solar tunnel driers and Chorkor smoking ovens as technology able to "produce high quality fish products, reach a wider market, reduce pressure on the declining artisanal fishing industry and increase income for local fisher families." The proposals explore use of this type of technology in other parts of the world and seek to introduce new strategies in Kenya.

Overall, significant research regarding the productivity and sustainability of the coastal, artisanal fishing industry has been conducted. Unfortunately, recommendations from these studies have not been implemented and few action plans have actually been initiated.

This study differs in many ways from previous studies in that it seeks to represent the voices of the local, disempowered community. It also seeks to establish grass-roots revitalization of the industry from within, where improvement and sustainability must be

inspired and driven from within the capabilities, initiatives and passions of the people who live along the coast.

Introduction and Background: Definition of the Lamu Artisanal Fishing Industry, Seasons, Methods and Equipment:

The Kenyan coastline stretches 640 km from Vanga at the Tanzanian border to Kiunga on the Somali border with access to 12 nautical miles of territorial waters and 200 nautical miles of the Exclusive Economic Zone, EEZ, which is a high potential fishing ground.ⁱⁱⁱ The inshore fishery has an approximate productivity of 12,000 tons, while offshore fishery including the EEZ, has a potential of up to 200,000 tons yet to be exploited.

The coast province is divided into four stratums: Lamu, Malindi, Mombasa and Kwale. The coast province maintains approximately 9,000 fishermen, which are supported directly through fisheries with a total production of 11,597,244 kgs. valued at Kshs. 813,709,546 for last year. iv

The Lamu stratum, one of the seven districts within the coast province, extends from the Somali border to about 2° 22'S and includes the entire Lamu archipelago. The Lamu stratum makes up about 4,176 square km in area, which is about 22% of the total shelf area. The Lamu archipelago consists of several islands with numerous fishing villages and hubs, all which specialize in specific areas of the industry, with Kizingitini and Kiunga leading in fish landings.

Other than the mainland

areas.

Mokowe, Mkunumbi, Witu, Barigoni, Mpeketoni, Kiongoni and Hindi, most of the district is a series of islands. To the far north, the islands of Kiungamwini, Siyu, Faza, Mtangwanda, Bori, Shanga, Chundwa, Mbwajumwali,

Iyabogi, Kizingitini, Mkokoni, Simambaya and Kiwayuu lie, while to the south, Ndau, Pate, Manda and Lamu Islands lie. The Lamu district has seven administrative divisions mainly: Amu (on Lamu Island), Faza (on

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Pate I sland), Kisingitini (on Island), Hindi (mainland), Witu ( south mainland), Mpeketoni (south mainland) and Kiunga ( north mainland). vi
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In Lamu district, there are approximately 1,500 fisher folk using 14 landing beaches. And on average, the district realizes 1,500 metric tons of productivity per year. Further, approximately 40% of the district's productivity is exported each year with 12% commission paid to the Lamu County Council. For example, the total landing of fish transported outside of Lamu for the month of December, 2005, was 63,470.5 kgs., worth approximately Kshs. 5,035,020, while the total fish locally consumed was 12,597 worth Kshs. 1,709,000.

In Lamu district, the main species of catch are rabbit fish, scavenger, snapper, cat fish, cavalla jacks, mackerel, blackskins, barracuda, mullets, queen fish, sail fish, tuna, prawns, lobsters, crabs, and sharks/rays in dried form, sardines, oysters and octopus. Prawns are caught in areas like Dodori creek, exploited by fishermen from Kipungani and Matodoni. Lobster and crab, which represent some of the best in the world, are caught in places like Kizingitini, Faza and Kiwayuu. Kiwayuu also produces sharks and rays for the dry fish market. And places like Kiunga produce shells, lobster, crab and finfish. Local fishermen use equipment such as lobster diving masks, gill nets, handlines, beach seines, longlines, uzio and melema, traditional equipment used by fishermen for centuries.

In Lamu district, fishing has been the main economic source of sustainability for hundreds of years, perpetuated through generations of family fishermen. Fishing is one of the

most important economic sectors in the area, sustaining the livelihood of 70 % to 75 % of the residents either directly or

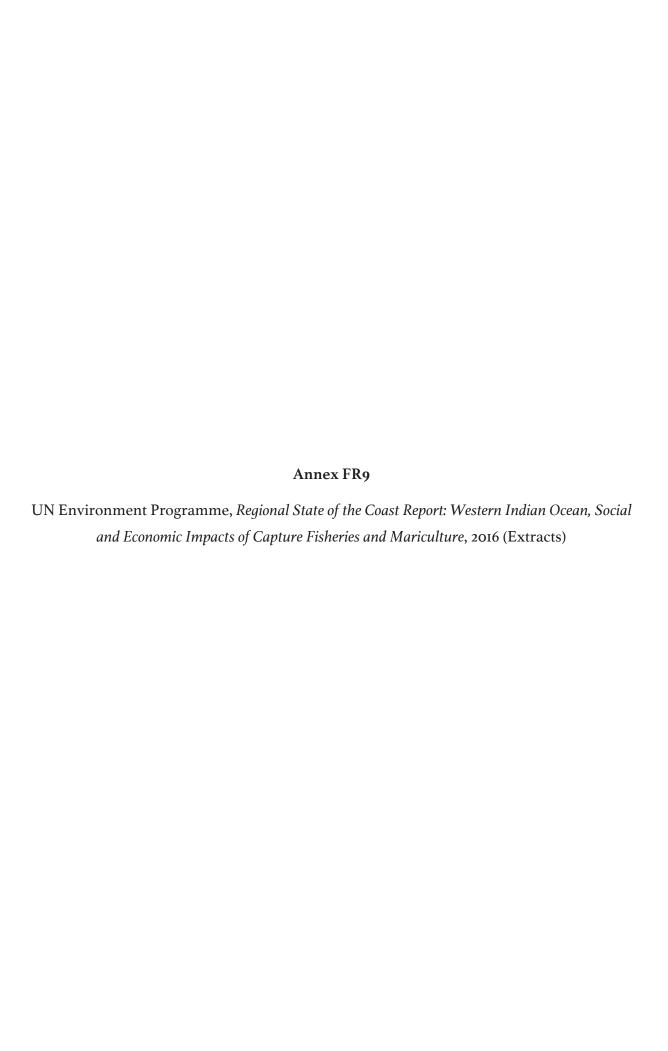
indirectly. xi The Lamu people have been well-known for their skills in fish production, boat building, sailing and other marine activities. The people along Kenya's coast have been involved in trans-Indian ocean trade for more than 1,200 years, producing a vast

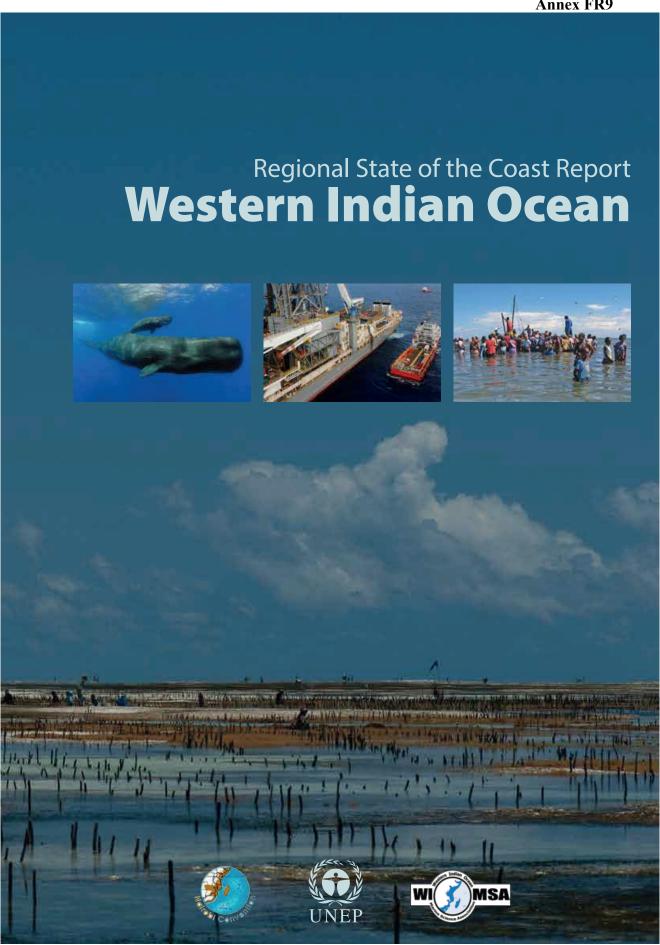
seafaring and mercantile society. Fish constitute the primary natural resource and source of protein and livelihood for the Lamu people. There is high local consumption as well as sales of quality resources like lobster, crabs and prawns to tourist markets in Lamu, Malindi and Mombasa.

In addition, tourism has affected the fishing industry by creating a larger market for products and relieving some of the population pressure for jobs from the fishing industry. However, the tourist industry, especially in Lamu, is monopolized by foreign investors who do not contribute to the local community in any significant way. xii Further, a great divide exists between the international tourist community and the Swahili and Bajuni people of Lamu. In Lamu district, absolute poverty is currently at 60%, leaving local people, 70% of which are sustained through the fishing industry, with few resources or ability to compete with national and international tourist markets. xiii

The seasonality of the tourist industry also perpetuates an inconsistent market and contributes to the fishing industry's already irregular nature. The artisanal fishing industry in Lamu is largely seasonal and affected by two wind and weather patterns known as the South East and North East monsoons. The North East (Kaskazi) winds are characterized by calm sea conditions ideal for small scale fishing, occurring from November to February. The South West (Kusi) winds, occurring between March and October, are characterized by strong winds and rough sea, making offshore fishing nearly impossible with traditional, small-scale fishing techniques.

Overall, the Lamu offshore, deep water stratum has great potential, with nearly 85% of its continental shelf lying above 200m. However, only 10% of fishing is done above 20 m which is called the off-shore area. xiv In summary, the Lamu district, which includes a very unique island archipelago, is an area of huge marine potential with a vast amount of underutilized assets.





Regional State of the Coast Report Western Indian Ocean









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Part I Summary	
Summary	
José Paula	

Executive Summary

The Western Indian Ocean (WIO) region spans across a large latitudinal range, from the Somalia region, influenced by the strong monsoon regime of the northern Indian Ocean, to the southern temperate regime of the tip of South Africa, where the Agulhas current diverges from the northward moving Atlantic Benguela current. It encompasses tropical and subtropical regions of diverse nature, rich stretches of coast along the mainland countries of Somalia, Kenya, Tanzania, Mozambique and South Africa, and vast oceanic areas surrounding the island states of Madagascar, Seychelles, Comoros, Mauritius and French Territories. Geomorphological and oceanographic features define the character of the WIO. The social tissue of the of the WIO, where much of the population lives at the coast, is an amalgam of diverse populations with different origins, a product of the rich and varied political history, where networks of trade interactions have generated a high ethnic and cultural diversity. The cultural heritage is thus important and matches the natural richness of the region. Most countries in the WIO have high population growth rates, and coastal development is expected to grow accordingly.

The Regional State of the Coast Report (RSOCR) derives from requirements of the Nairobi Convention and contributes to the United Nations-led production of the World Ocean Assessment (WOA) reports as well as to other global and regional processes, such as the Environment Outlooks coordinated by UNEP. The RSOCR aims to integrate the socio-economic and ecological systems of the WIO region by using a uniform methodology based on the

Opportunities Framework and the DPSIR (Drivers, Pressures, Status, Impacts, Responses) approach. The RSOCR's approach has been adapted from the WOA framework, however the content and organization of the concluding chapters are based on the distinct needs of the WIO region. While the political agenda included the Contracting Parties and their National Focal Points to the Nairobi Convention, the technical process was guided by WIOMSA (Western Indian Ocean Marine Science Association) and involved a representative set of scientists with broad experience in the region. The RSOCR's main objectives are to i) provide a comprehensive baseline, ii) highlight main opportunities, iii) describe successes and challenges, iv) identify capacity building needs, v) identify knowledge gaps, and vi) propose policy options.

The WIO region is characterised by high biodiversity, both in terms of species and ecosystems, which places it as one of the most rich and interesting ocean regions of the world. The regional countries have in general low income, and as such a large fraction of the population is dependent on coastal and marine resources and ecosystem services. The biodiversity of these systems is thus under direct and indirect pressures through resource exploitation and anthropogenically-driven habitat degradation. The effects and impacts of global climate change add further pressures to local-acting sources of disturbance. The assessment of biodiversity (developed in Part III of the report) addresses the main ecosystems that constitute the major support for biodiversity and living resources, such as the nearshore

habitats, mangroves, salt marshes and seagrass beds, coral reefs, rocky reefs, sediments and pelagic and deep sea environments. The assessment further includes a summary of threatened marine species, as well as the significant social and economic aspects of biodiversity conservation. Regarding the biodiversity assessment it is apparent that marine ecosystems in the WIO region are in a fairly good condition, but the pressures from global climate change acting synergistically with the local anthropogenically-induced drivers are increasingly challenging the natural processes.

Sectorial and specific recommendations have arisen from the RSOCR that target the sustainable use of biodiversity resources and the maintenance of ecosystem quality and associated biodiversity, as derived from the goals of the Convention for the Biological Diversity and its 2020 targets. These relate firstly to the efforts of addressing the engagement of the civil society (such as promoting awareness on the value and vulnerability of the WIO natural marine and coastal capital at varying levels including by resource users and managers, public, politicians and authorities). Secondly, it is recommended that higher levels of funding for marine research are considered, especially targeting knowledge gaps such as the continental shelf and the deep ocean, conservation areas, resilience and habitat restoration and rehabilitation, but also aiming to increase the level of management processes. Another recommendation for the short term is the establishment of comprehensive monitoring schemes for the marine environment, while in the longer term there is a need of a progressively better integration of regional policies and the promotion of cross-sectorial linkages, allowing for more coherent approaches to ecosystem management and transboundary issues.

Over 60 million people inhabit the coastal zone in the WIO region, which has very high rate of population growth and urbanization. Invariably many of the coastal communities rely on the sea for their economic, social and cultural security. Assessment of services from the marine environment, other than provisioning services, is developed in Part IV of the report. The non-provisioning services provided by the WIO may be categorized into regulating, supporting and cultural services. The assessment includes the role of oceans' in the hydrological cycle, sea/air interaction, phytoplankton primary production, ocean-sourced carbonate production and cultural and derived services from the marine environment. The assessment of ecosystems ser-

vices, other than provisioning services, emphasizes the same global challenges and the increasing pressures of the variety of human activities on the marine and coastal environment.

Ecosystem services should be addressed based on Blue Economy principles, and for this to happen appropriate holistic ecosystem services valuation should be promoted. In the short term, addressing knowledge gaps will have to involve innovative research, targeting trends of ecosystem services, their drivers of change, vulnerability and mitigation actions. A strong recommendation regards knowledge integration, namely the inclusion of traditional management systems together with modern approaches and its recognition in laws and regulations, allowing for a better engagement of communities.

The WIO region is characterised by high marine biodiversity, but contrastingly the biomass of individual species is generally low, with marine productivity depending more on nutrient input from rivers along the coasts of eastern Africa and Madagascar, than on upwelling systems. The assessment of food security from marine resources is dealt with in Part V of the RSOCR, and its most important contributions are the capture fisheries, the growing emergent mariculture activities and their socio-economic impacts. The rapid population growth and global economic expansion over the past 50 years have exponentially increased the pressure on coastal resources, and overfishing and coastal developments have put pressure on the abundance of stocks and the biological diversity. Compared to fishing, mariculture is recent in the SW Indian Ocean and it appears to have positive future prospects, particularly in Madagascar, Mozambique, Tanzania and Kenya.

Overfishing of marine resources should be addressed by authorities by appropriately quantifying fishers, methods and harvests. Evident knowledge points to the need for research to target distribution patterns, biological characteristics and reference points, stock status and the effects of fishing. Research results should be passed to managers and thus there is a need to strengthen the linkages between science and management. This way managers can provide better plans for fisheries and the main target species, adopt holistic ecosystem approaches, and promote co-management of artisanal fisheries and cooperative management of transboundary stocks. Sound management also requires that monitoring, control and surveillance capacities be increased in most WIO countries. But opportunities for increased food production from marine resources are also

present and should be addressed, such as expansion of fisheries into deeper waters and promotion of mariculture.

Assessment of other human activities in the marine environment is developed in Part VI of the RSOCR. It includes a number of important sectorial issues such as maritime activities, oil, gas and renewable energy, coastal mining and coastline stability, tourism and recreation, urbanization, coastal development and vulnerability, marine genetic resources and bio-prospecting. The adoption of a Blue Economy agenda should drive development of human activities that promote economic development and poverty alleviation, while at the same time ensuring sustainable use of resources and maintenance of environmental quality. Some of the analysed emergent activities can turn into opportunities for human development in the WIO region. Maritime activities and mineral extraction from the coast are increasing in the region, as are emergent and fast growing socioeconomic activities such as oil and gas exploration, tourism and bio-prospecting. While these sectors offer vast opportunities for economic development, their potential impacts can challenge sustainability and should be addressed through sound, integrated management strategies.

The pressures and opportunities created by emergent human activities mean that efforts should be invested in increasing our knowledge about resources, their environment and the social aspects of their exploitation. It is desirable that, in the longer term, equitable access to and benefit sharing of coastal and marine resources be promoted. But in the short term there should be an effort to develop mechanisms and tools for handling and processing data, promotion of the production of spatial data products, as well as integrated coastal management and the necessary legal frameworks.

The scenario approach of the RSOCR adopted the DPSIR framework and was integrated based on variables, links, and feedbacks relevant to dynamic modelling of marine social–ecological systems including drivers that influence human behavioural change, such as society, knowledge systems, political and institutional settings and the economy. The assessment used two main scenarios (or opposite worlds): the Conventional World Scenario (CWS) representing a business as usual pathway (BAU), and the Challenge Scenario or Sustainable World Scenario (SWS) representing the Western Indian Ocean Strategic Action Programme (WIO-SAP) aspirations and the Sustainable Development Goals (SDGs). The use of the scenario

framework must be adaptive and respond to new challenges, opportunities or threats that undoubtedly emerge. The Nairobi Convention through its management and policy platforms can promote the scenario framework for engagement between actors and also as a basis for decision-making and as tools for planning and environmental monitoring. Scenarios can be used for the creation of options for policy and management aimed at effectively managing the coasts and oceans, promote adaptive management, but also to monitor programmes set for the refining of scenarios in view of observed changes over time.

The governments of the WIO region are Parties to the Nairobi Convention, which offers a regional legal platform for the protection, management and development of the marine and coastal environment, constituting a framework of governance in the WIO region. There are several other institutions, regulatory or policy frameworks with a mandate for governance, including national and regional institutions, regional economic integration organizations, regional and international civil society organizations, and global inter-governmental institutions. Legal and institutional frameworks for addressing the marine and coastal environment include constitutional provisions, framework environmental laws and sector based laws. Governance responses and interventions are constrained by overlapping mandates of different level institutions, giving rise to inefficient use of governance instruments and resources. Nevertheless, legal, institutional and policy responses appear to converge, acknowledging that anthropogenic activities pressuring on coastal and marine zones have environmental impacts that need to be regulated. WIO countries apply Environmental Impact Assessment regulations and these are naturally merged into evolving Integrated Costal Zone Management laws and policies.

Contrasting policy options are open to the countries of the WIO region concerning the sustainability of the coastal and marine environment, both at the national and regional levels, including: i) overarching policy instruments with sector players taking primary responsibility, ii) maintenance of sectorial policies and providing a coordinating mechanism, and iii) maintenance of sector policies as well as sectorial implementation of the policies without having a coordinating mechanism. Irrespective of these options, there are scenarios that countries of the WIO region need to consider so as to mainstream coastal and marine issues for the future: policy instruments which largely or primarily provide incentives for voluntary compliance or, alterna-

tively, countries may consider strengthening the command and control approach in their policy formulation.

The overall human capacity for governance of ocean and coasts in the region is still incipient and currently does not cover the necessary array of disciplines, their up to date methodologies and the complex and multidisciplinary issues in the coastal and marine environments. The many socioeconomic and institutional factors that constrain capacity in the WIO region include limited financial and human resources, low investment in education and training, inadequate knowledge and awareness and lack of legal expertise. Investment and innovative approaches to human capacity development remains a top priority for countries in the WIO.

The Regional State of the Coast Report for the Western Indian Ocean has used a DPSIR framework for the assessment of the relevant components pertaining to the marine and coastal environment. The analysis has highlighted the main drivers of change and the consequential pressures that are exerted on the environment and human livelihoods, described current status and trends of natural and societal processes, and identified impacts. Responses to these challenges were summarized and further translated into recommendations under main sectors, providing linkages and integrative mechanisms for addressing them.

The WIO region is faced with strong challenges regarding the sustainability of its marine and coastal environments, both from global trends that require wider international integration, but also from regional and local sources of disturbance that governance mechanisms need to address. The path towards meeting the natural expectations of the development of the region's societies requires socioeconomic development and the use of the region's rich natural resources. Emergent opportunities are arising and regional capacities growing, both in terms of technology and human capacity, from the civil society to decision making structures. The adoption of a Blue Economy and the will to address socioeconomic development in the region, with emphasis on poverty alleviation, gives a hope for the future of the marine and coastal environment of the WIO region and the associated human wellbeing and livelihoods.

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Part V Assessment of Food Security from Marine Resources

Johan Groeneveld

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23

Social and Economic Impacts of Capture Fisheries and Mariculture

Jacob Ochiewo

Opposite page: Improvised fishmarket at landing site, Inhaca Island, Mozambique. © José Paula.

INTRODUCTION

Several countries of the SW Indian Ocean are classified as Least Developed Countries (LDC) by the UNDP, and have a low Human Development Index (HDI) (UNDP 2014). High levels of poverty and rapid population growth is pervasive, and in coastal communities along the mainland (Mozambique, Tanzania, Kenya), Madagascar and on small islands (Comoros, Seychelles, Mauritius) capture fisheries are integral to food security (see Chapter 21) and the functioning of social and economic systems. In recent years, mariculture initiatives have taken root in some areas, such as seaweed farming in Zanzibar, but at a regional scale it is still in an early developmental phase (see Chapter 22).

Fish is rich in essential nutrients for human health (in particular iron, iodine, zinc, calcium, vitamins A and B), and is especially important in the diets of infants, children and pregnant women (Satia 2011). On a worldwide scale, per capita fish consumption continues to rise – up from 10 kg in the 1960s to more than 19 kg in 2012, driven by higher demand from a growing population, rising incomes, and more efficient distribution channels (FAO 2014). However, the opposite trend is apparent in the SW Indian Ocean, where per capita fish consumption is the lowest in the world, and declining. A decrease in fish availability in coastal waters, increasing poverty levels, and a rapid increase in human population size can partially explain the decline in fish consumption in this region. Another factor is

that some species with a higher economic value (namely tuna, prawns and lobsters) are exported, and these species are therefore scarce on local markets, or are prohibitively expensive (FAO 2014).

Environmental degradation caused by fishing and mariculture activities (see Chapters 21 and 22) can reduce potential harvests and food security, affect economic growth and reduce the quality of life in coastal communities. Domestic sewage and agricultural waste runoff, chemical contaminants and microbial run-off increase the risk of disease (see references in European Marine Board 2013). Food safety systems for fish products, such as Standard Sanitary Operation Processes (SSOP) and Hazard Analysis Critical Control Point (HACCP) programmes have been developed in some SW Indian Ocean countries, mainly to comply with export regulations of foreign markets. For instance, the European Union (EU) requires established risk management processes that comply with regulations on food safety and quality control. These measures may safeguard large producers against the impacts of changes to international trading standards, but ignore small-scale producers that deliver to local markets (Satia 2011).

This chapter focuses on the social and economic impacts of capture fisheries and mariculture on coastal communities, their scale and significance for employment, role in social structure, and their contributions to livelihoods.

SOCIO-ECONOMICS OF CAPTURE FISHERIES

Scale of capture fisheries

Trends in capture fisheries have been described in detail in Chapter 21. Estimating the scale of the fisheries sector is notoriously complex, because it employs both fishers and a large number of people involved in related activities, such as fish processing, distribution and marketing. Enumeration is particularly difficult at the community level, where these activities are largely informal. Consequently there are many different estimates of the numbers of artisanal fishers per country and regionally. The actual numbers are difficult to discern because of the highly dynamic nature of fishing activities and data collection limitations. The numbers of fishers can vary seasonally and between years. Fishers often have more than one occupation (for instance fishing and farming) and may switch between them depending on opportunity and perceived gain. Furthermore, women and children also participate in gathering marine organisms in the intertidal zone, but are not generally counted as fishers. Estimating the number of fishers based on the number of fishing licenses issued also has limitations because licensing requirements tend to be weakly enforced. Even where fisheries censuses are conducted, the above constraints can lead to considerable underestimations of the artisanal fisheries sector. Estimates for the comparatively smaller industrial fisheries sector tend to be more accurate than for the artisanal sector, because the number of fishing units and employment is more consistent (van der Elst and others, 2005).

Some estimates of the numbers of fishers by country and their relative importance are as follows (see Figure 23.1):

- Comoros (population est. 850 000 in 2008): There are 127 coastal villages around three habitable volcanic islands. In 2012 and 2013, traditional fisheries comprised 3 961 small wooden boats and 7 922 fishers, catching mainly demersal fishes. Artisanal fisheries, catching mostly tunas, comprised an additional 1 794 boats and 4 062 fishers. Fishing is seasonal, declining during the 'kusi' period of strong SE monsoon winds (June-August), and increasing during the 'kashkasi' period of weak NW monsoon winds (December-April) (Mahamoud 2013).
- Madagascar (population est. 21 million in 2011): Madagascar has a coastline of 5 600 km, and the maritime fisheries sector is structured into traditional fisheries (on foot or using dugout canoes), artisanal fisheries (motorised boats with engines <50 hp) and industrial fisheries (mainly shrimp trawl, with engines >50 hp). Industrial prawn fisheries had 35 vessels in 2013-2014 and about 4 500 fishers. Estimates of artisanal fishers (including traditional) are 55 000-70 000 fishers, using 8 000 boats (with engine) and roughly 22 000 canoes (Soumy 2006; WIOFish 2013).
- Mauritius (population est. 1.3 million in 2010): Mauritius (1 864 km²) is surrounded by 150 km of fringing reef and small outer islands at Rodrigues, St Brandon and

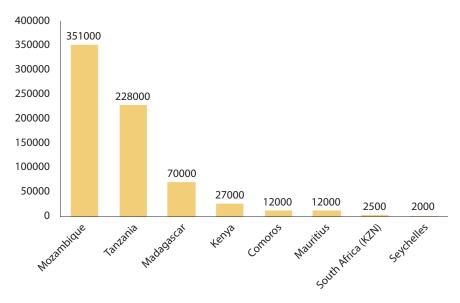


Figure 23.1. Number of commercial fishers per country, including artisanal and industrial sectors.



Figure 23.2. Fisherman scouring intertidal reef in southern Madagascar. © Johan Groeneveld.

Agalega. Fisheries provide employment to about 12 000 people (full-time fishers and employees in processing, for example freezing, salting, smoking, canning and ancillary services). There are about 4 000 artisanal fishers using >2 000 boats, and 700 industrial fishers using 15 boats. Recreational fishing lands a low volume of fish, compared to the other sectors, but 24 000 fishers using >1 000 boats was reported by Jehangeer (2006). Production is insufficient to cover local demand for fish products.

• Seychelles (population est. 88 300 in 2012): Seychelles is an archipelago of 115 tropical islands spread over 1 374 million km² of ocean, and is classified as a high-middle-income country. Fisheries are the economic mainstay, contributing more to GDP than tourism. Fish products contribute 90 per cent of all exports. Around 80 per cent of the tuna catch in the Western Indian Ocean is landed or trans-shipped in the Seychelles, where one of the largest tuna canneries in the world is the main employer of locals. Consequently, the Seychelles economy depends heavily

on the cannery, which in turn depends on the EU export market. The industrial fleet is foreign owned, comprising purse seiners and longliners. In 2011-2014, licenses were given to 48 purse seiners and >200 longliners, from the EU, Taiwan, China and Japan. Not all vessels were active (Martín 2011). Artisanal and semi-industrial fishing employs about 1 800 local fishers using 417 licensed small boats, and most of the catch is consumed locally.

• Mozambique (population est. 25.7 million in 2015; www.ine.gov.mz): The fishing sector makes up about 1.4 per cent of GDP and has grown by ca. 13.4 per cent per year between 1997 and 2011, through diversification of the species caught. According to the 2012 artisanal fisheries census, 351 000 people are employed, of which approximately 90 per cent are artisanal fishers or involved with fish processing and marketing. Small-scale fisheries are crucial to rural economies, but face pressures from illegal and overfishing, habitat degradation and climate change effects (Benkenstein 2013). Industrial fishing by Mozambican

companies and joint ventures between the state, Japanese and Spanish companies is focused on catching prawns. Fishing ports, storage, boatyards and workshops are located in Maputo, Beira, Quelimane, Nacala and Angoche. Prawns are the principal export product, but other exports are spiny lobster, langoustine and fish (www.mbendi.com).

• Kenya (population est. 42 million in 2011): Fish production is dominated by freshwater fish from lakes (96 per

cent of approx. 150 000 tonnes per year), with marine fish contributing only 4 per cent, averaging around 8 800 tonnes. Marine fisheries are divided into industrial, artisanal and recreational fishing sectors, and together they employ around 27 000 people in sea and shore-based activities. The artisanal sector employs over 13 700 fishers (Department of Fisheries 2012), and these fishers remain mainly within or near the fringing coral reef. Limited industrial

BOX 23.1

RESOURCE USER CONFLICT IN KENYA



Boats in Malindi at sunrise. © Xiaojun Deng.

An artisanal fishery has been active in Malindi Ungwana Bay for hundreds of years, and presently comprises about 3 500 fishers and 600 traditional boats that fish in nearshore waters. These fishers compete for finfish and prawn catches with a commercial trawl fishery, active since the 1970s. Trawling takes place close to the coast (within 5 nautical miles, in contravention of the fisheries act) because most prawns occur in shallow waters near river mouths. This brings them into direct conflict with artisanal fishers, when trawling damages artisanal fishing gears, or when retained fish bycatch competes with artisanal catches on local markets. The artisanal fishery targets some of the finfish species caught and dis-

carded overboard by trawlers – these catches include juvenile fish considered to be too small or of low economic value. Therefore artisanal fishers attributed declining catches to the effects of trawling, albeit without direct scientific evidence. Trawling was banned in Malindi Ungwana Bay in 2006, and artisanal catches increased roughly two years after the trawl ban took effect. The trawl fishery resumed in 2011, subject to a Prawn Fishery Management Plan (2010). The plan restricts the fleet to four trawlers that may only operate during daytime, further than 3 nautical miles from the coast, and it includes a closed fishing season between November and March.

prawn trawling in Malindi-Ungwana Bay has resulted in conflict between artisanal and trawl fishers (see Box 23.1). Offshore resources in the Exclusive Economic Zone (EEZ) are exploited by Distant Waters Fishing Nations (DWFN) through a licensing system (FAO 2007a). Essential legislative components are in place, but governance in the offshore sector is limited to collecting licensing fees, without adequate enforcement.

- Tanzania (population est. 51 million in 2014). Marine fishing is concentrated near the mainland shore, within the fringing reef and near estuaries such as the Rufiji delta, and in territorial waters around Zanzibar, Pemba and Mafia islands. Artisanal fishers land >90 per cent of the catch, through foot-fishing and gleaning in the intertidal or using dugout canoes, or dhow-type planked boats (FAO 2007b). Many foot-fishers are women and children. Coastal fisheries are essentially unrestricted, although licenses are theoretically required (Groeneveld and others, 2014). Some species are exported, for instance octopus. Various estimates place the number of fishers between 35 000 (2009 frame survey), and 228 000 (WIOFish 2013). Industrial fisheries include a prawn trawl fishery (presently suspended) and fleets of foreign longliners and purse seiners that target tuna and tuna-like species under license in EEZ waters. Recreational fisheries are restricted to the tourism sector.
- South Africa (KwaZuluNatal province, which forms the southwestern boundary of the SW Indian Ocean; population est. 10 million in 2012): The coastline is exposed with few bays and inlets, and fisheries are less extensive than further north. Twenty-three communities are presently involved in subsistence and artisanal fishing, with approximately 2 500 people participating in five fisheries: estuarine fish traps (Kosi Bay); marine and estuarine rod and line fishing; marine rocky and sandy shore invertebrate harvesting (mainly brown mussels); estuarine sand and mud prawn harvesting (bait harvesting); and traditional spear fishing (handheld spears, at Kosi Bay) (Everett 2014, Goble and others, 2014). Together, these fisheries produced about 150 tonnes of food in 2010. Oyster-gathering in the intertidal, beach seine-netting, industrial trawling for crustaceans, and a line fishery from ski boats form the commercial sector. Between 1999 and 2008, an average of 3 800 to 5 500 people purchased recreational permits to harvest lobster, mussels and other marine invertebrates. Recreational shore angling comprised 55 000 participants in 2009, and a collective 800 000 angler

days of fishing. Shore angling effort is high near urban areas, and annual catches range between 250 and 600 tonnes. At least 10 000 recreational boat fishers undertake over 30 000 recreational boat launches per year, reporting annual catches of between 400 and 470 tonnes per year. Many anglers fish in both marine and estuarine environments (Everett 2014).

Role in social structure

Social structure is defined as a system of geographically dispersed rules and practices that influence the actions and outcomes of large numbers of social actors. The importance of capture fisheries in coastal communities as a source of food and economic activity makes it a major determinant of social structure. Key actors are the fishers, mainly men in the formal fishing sectors. Women, and sometimes children, play a significant role in collecting seashells, sea cucumber and octopus in the intertidal for a few hours each day, usually during low spring tides, using hands and sticks or rods (Jiddawi and Ohman 2002). They also use mosquito nets close to the shore to catch shrimps and small fishes. In addition to collecting marine products, women play a prominent role in the processing and marketing of fish (Jiddawi and Ohman 2002; Ochiewo 2004). The 2012 artisanal fisheries frame survey estimates that about 18 per cent of the fishers are women. Other industries that support fishing are artisans that make and repair boats and fishing gear.

Middlemen and traders play an important role in the artisanal fishery, by providing opportunities for fishermen who cannot afford to buy their own gear or vessels (Jiddawi and Ohman 2002; Ochiewo and others, 2010). Middlemen usually own gear (seine or gill nets) or vessels (dhows or boats with engines), which they rent to fishers. The money obtained from the catch is typically divided into three parts: one for the middleman, one for boat and gear maintenance, and one for all fishermen on the boat, regardless of their number. Traders then distribute the fish inland. Consequently the fishermen themselves receive the smallest return.

Fisher migrations along the East African coast is centuries old, and illustrates social adaptation to a complex environment (Fulanda and others, 2009; WIOMSA 2011)(see Box 23.2). Migrations are either temporary or permanent, and patterns vary tremendously, both within and across country borders, and from a few days to several months or years. Drivers are a search for better catches and increased

income. Fisher migrations are seasonal, and associated with social and economic challenges at home and host destinations.

Contribution to livelihoods

To illustrate the dependence on marine resources, an estimated 50 per cent of Mozambicans rely primarily on fish for protein intake. In Tanzania, up to 70 per cent of protein intake may comprise fish from freshwater or marine origin. Population densities along the coast are high (>50 per cent of 21 million people in Madagascar; >20 per cent of 51 million people in Tanzania), and many of them are intimately linked to the sea for food security and jobs. Although precise data are lacking, surveys suggest that 400 000 to 700 000 fishers engaged in marine fishing in the region between 2004 and 2013 (van der Elst and others, 2005, WIOFish 2013), and considering that there is a dependency ratio of about 7: 1 (UNEP 2001), this means that almost 5 million people are directly dependent on fishing for their livelihood. Dependence on fisheries varies among countries, and is highest in Mozambique, Tanzania and Madagascar, and lower in eastern South Africa, where the economy is more diverse.

Economic benefits and contribution to GDP

On a world scale, fish production generally contributes 0.5 - 2.5 per cent of GDP (Bene and Heck 2005). However, the contribution can be much higher in developing countries, where fisheries play a more central role in economic development, poverty reduction and food security (often > 5 per cent of GDP in many west African countries; Bene and Heck 2005). Most assessments measure only the value of fish production, but if processing, trade and services are added (these mostly fall in other sectoral accounts), the overall contribution of fisheries can be much higher (World-Fish Center 2011). Estimates of the contribution of capture fisheries to GDP (without any value adding) show exceptionally high contributions for small island states (30 per cent for Seychelles and 15 per cent for Comoros) and above the world average for Mozambique (4 per cent) and Tanzania (2.7 per cent). Contributions to GDP were much lower for Madagascar (1.4 per cent), South Africa (1 per cent) and Kenya (0.5 per cent).

Fisheries governance

Fisheries co-management and the development of comanagement institutions is a promising trend in the SW Indian Ocean region. Beach Management Units (BMU) have recently been established in Kenya and Tanzania to co-manage fisheries within a system with broader stakeholder participation (Oluoch and others, 2009, Japp 2012). Each BMU has jurisdiction over a geographical area that constitutes a fish-landing point, which it manages jointly with fisheries department officials. BMUs are empowered to levy fees against members for services provided, for day-to-day expenses. Although a clear addition to the social structure of fishing communities, it is not yet clear whether BMUs will succeed over the long term. In Mozambique, co-management takes place through Community Fishing Councils (CCPs).

At the international level, SW Indian Ocean countries are signatories to many fisheries agreements, such as the 1982 UN Convention of the Law of the Sea; 1995 FAO Code of Conduct for Responsible Fisheries; 2000 UN Millennium Declaration and Millennium Development Goals; 2002 Johannesburg Declaration on Sustainable Development and Plan of Implementation; 2005 Rome Declaration on Illegal, Unreported and Unregulated (IUU) fishing; and the FAO Ecosystem Approach to Fisheries (EAF). Unfortunately, most countries do not have the capacity or infrastructure to effectively implement the administrative and enforcement tasks brought by these agreements. Most governance issues, at national and regional levels, are explained in Chapter 33 and policy analyses in Chapter 34 of this report.

SOCIO-ECONOMICS OF MARICULTURE

Scale, role in social structure and contribution to livelihoods

Contrary to the global trend in which aquaculture production outstrips that from capture fisheries (FAO 2014), capture fisheries still dominate production in the SW Indian Ocean, with low dependence on mariculture. An exception is seaweed farming in Zanzibar, where the scale, role in social structure, and contributions to livelihoods is substantial. The seaweed sector in Zanzibar has grown continuously since the early 1990s, and now extends over 80 villages, where 23 000 people are involved, of which 90 per cent are women.

About 30 per cent of those directly employed on prawn farms in Madagascar are women who work in the post-harvest operations or administration (FAO 2006). Small-scale seaweed farming in southern Kenya employs

BOX 23.2.

MIGRANT FISHERS - ADAPTING TO A CHANGING ENVIRONMENT



Fishing boats waiting for the tide in northern Zanzibar, Tanzania. © José Paula.

From time immemorial, migrant fishers along the coast of East Africa have followed fish movements, to increase catches and income. These fishers often cross geopolitical borders, and their movements are highly variable, the duration ranging from a few days to several years. Migrations are seasonal, mostly in synchrony with the milder sea conditions of the North East Monsoon, when sea travel in wooden boats is easier. Fisher migrations can be seen as a social adaptation to a complex environment of fluctuating resource availability. Migrations have social and economic implications for both home and host destinations. Most migrants are young men, leaving behind wives and children. They tend to increase host

populations, placing pressure on village infrastructure and social functioning, through competing for fish resources and market share. Although migrant fishers save part of their earnings to send home, they may also boost host economies through increased clientele for food stuffs, accommodation, provision of social amenities, and increased revenues for Beach Management Units (BMUs) from fish levies, especially in Kenya. On the down side, local fishers may complain that fish markets are flooded with cheap fish, thus reducing the value of their own fish catch. Fisher migrations may in future be affected by shifting fish distribution patterns caused by climate change.

mainly women. Over half of the sea cucumber farmers supported by Blue Ventures in Madagascar are women; they use the income to help pay for their children's school fees and supplement their family's diet (www.blueventures.org). Mariculture therefore contributes to empowering women as owners of farms, or as important actors in the fisheries value chain and marketing; in this way they participate in societal decision-making (Hecht and others, 2006, Wakibia and others, 2011).

Chapter 22 showed that mariculture of most species in the SW Indian Ocean have not progressed past the pilot phase over the past two decades, and apart from the examples above, it only contributes little to livelihoods and economic activity. The lack of growth occurred in spite of technically successful pilot results, and apparently suitable environmental conditions for expansion, such as suitable land and warm productive waters throughout the year. Presumably the constraints imposed

by the remoteness of the region, distance from markets, and absence of infrastructure and technological skills were initially underestimated. These constraints need to be overcome before mariculture can expand in scale and economic impact on a more sustainable basis. Furthermore, full development of mariculture in the SW Indian Ocean will require effective governance and strong support from governments and NGOs (Troell and others, 2011).

Marketing and export

The success of mariculture depends heavily on the availability of markets for its products as well as availability of inputs such as quality fish seed, feed and water. Products are generally perishable and require ice plants, cold storage and suitable transport facilities to ensure their quality at the point of sale. These requirements restrict farms to the vicinity of urban centers. An exception is seaweed,

which can be sold and exported dry.

The seaweed harvest in Zanzibar is dried and sold to buyers (middlemen) who deal directly with processing companies in the US, France, Denmark and Spain (Msuya 2009). The buyers have a monopoly and set low prices for seaweed. Farmers can stockpile dry seaweed to increase the price by restricting supply, but villages depend strongly on the income. Value-adding in Zanzibar through processing has often been mentioned as an option to increase the income from seaweed farming.

The principal fish marketing information services in the region are INFOPECHE (Intergovernmental Organization for Marketing Information and Cooperation Services for Fishery Products in Africa) and COMESA (Common Market for Eastern and Southern Africa). These organizations publish a directory of fish importers and exporters annually. Stringent export requirements make small-scale producers less competitive. To overcome potential marketing hurdles, producer associations can be formed to assist farmers with technical and marketing aspects. One such example is provided by the community-based culture of sea cucumbers in Madagascar, where an established network of business and research partners provide assured access to markets, hatchery technology and supply, and technical expertise (see Chapter 22; www.blueventures.org).

Gaps in capacity to engage in socioeconomics of capture fisheries and mariculture

The most obvious gap is a lack of hard information on the importance of capture fisheries and mariculture to the food security and local economies of households near the coast. There is a lack of alternatives to capture fisheries, even when catches from coastal areas are declining, and the populations are increasing.

A common trend across much of the SW Indian Ocean is to provide better boats and gear to enable artisanal fishers to exploit resources further away from the shore. These policies are, however, being promoted without adequate knowledge of deep-water fisheries. A recent study (Everett and others, 2015) suggested that deepwater crustacean stocks may be smaller than formerly thought in Kenya and Tanzania – it is important to investigate their fisheries potential before overcapitalizing on fishing fleets.

Mariculture, as an alternative to capture fisheries, has not taken root as expected, presumably because of the constraints brought by the remoteness of the region, lack of infrastructure and technical know-how. These limitations can only be overcome through a synchronised effort by governments, private operators, and NGOs. What this synchronised effort should entail, and the capacity necessary to implement it, needs to be determined first.

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PolicyBrief



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A vehicle to articulate development issues and foster dialogue

Leveraging the Blue Economy for Inclusive and Sustainable Growth¹

Summary

The blue economy has a great potential to contribute to higher and faster GDP growth in Kenya. Innovation and growth in the coastal, marine and maritime sector could deliver food, energy, transport, among other products and services and serve as a foundation for sustainable development in Kenya. Diversifying the country's economy beyond land-based activities and along its coastal, marine and maritime sector is critical to achieving the Sustainable Development Goals (SDGs) and delivering smart, sustainable and inclusive growth. This is especially important in the context of the accelerated growth that the country is experiencing without any concomitant reduction in poverty. This policy brief aims to raise awareness of the importance of the blue economy to Kenya. It does this by defining the blue economy and its components to show how Kenya can leverage the blue economy's forward and backward linkages with the various sectors of the economy. The policy brief provides reflections on the necessary policies that should be implemented to leverage the blue economy for sustainable development and inclusive growth in Kenya and Eastern Africa region. It also serves as a building block for further development of policies to support the blue economy in the region.

1. Introduction²

The potential linkages between the *blue economy*, sustainable development and economic growth is recognized in the *2030 Agenda for Sustainable Development*. *SDG target 14.7* focuses on enhancing the economic benefits to Small Island Developing States (SIDS) and Least Developed Countries (LDCs) from the sustainable use of marine resources, including through the sustainable management of fisheries, aquaculture, and tourism. SIDS have been at the forefront of the *blue economy* advocacy, recognizing that oceans have a key role to play in humanity's future and that the blue economy offers an approach to sustainable development better suited to their circumstances, constraints and challenges.

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²This policy brief is an input to Sustainable Blue Economy Conference that will be hosted jointly by Kenya and Canada in Kenya, 26-28 November 2018.

²This policy brief is an output of the Strategic Policy Advisory Unit (SPAU) in the UNDP Kenya Country Office. The Unit focuses on upstream policy interventions in the areas of human development, pro-poor policy analysis, Agenda 2030 for Sustainable Development. It also supports the national and county governments in the design and implementation of evidence-based national development plans, county integrated development plans and other relevant policy instruments.

The views expressed in this policy brief are those of the SPAU, and do not represent the views of UNDP, the United Nations or any of its affiliate organizations

The *blue economy* integrates an innovative approach to the economic exploitation of the resources of oceans, lakes, rivers and other bodies of water. The concept seeks to promote economic growth, social inclusion, and preservation or improvement of livelihoods while at the same time ensuring environmental sustainability. At its core, it refers to the decoupling of socioeconomic development through oceans-related sectors and activities from environmental and ecosystems degradation.³ The East Asian Seas (EAS) Congress (2012) defined the *blue economy* as:⁴

... a sustainable ocean-based economic model that is largely dependent on coastal and marine ecosystems and resources, but one that employs environmentally-sound and innovative infrastructure, technologies and practices, including institutional and financing arrangements, for meeting the goals of: (a) sustainable and inclusive development; (b) protecting the coasts and oceans, and reducing environmental risks and ecological scarcities; (c) addressing water, energy and food security; (d) protecting the health, livelihoods and welfare of the people in the coastal zone; and (e) fostering an ecosystem-based climate change mitigation and adaptation measures.

Ebarvina (2016) notes that for many in the public and business sectors, the linkage between the *blue econ*omy, economic growth, and ocean and coastal resource conservation should be clarified by highlighting the following:

- i. The blue economy encompasses all economic activities with a direct dependence on the ocean or coastal and marine resources. These include economic activities that are (a) ocean-based, and (b) ocean-related. Ocean-based activities include those that are undertaken in the ocean (e.g., fisheries and aquaculture, offshore oil and gas, mining, ocean energy, desalination, shipping/marine transportation, marine tourism, marine construction). Ocean related activities use products from the ocean (e.g., seafood processing, marine biotechnology, chemicals, salt, etc.); and produce products and services for the ocean and ocean-based activities (e.g., ship building and repair, ports, tourist resorts, communication, maritime insurance and law, maritime technical services, etc.).
- ii. The *blue economy* also includes marine education and research as well as activities of the public sector agencies with direct coastal and ocean responsibilities (e.g., national defense, coast guard, marine environmental protection, etc.).
- iii. The ocean generates economic values that are not usually quantified, such as habitat for fish and marine life, carbon sequestration, shoreline protection, waste recycling and storing, and ocean processes that influence climate and biodiversity.
- iv. New activities are also evolving over the recent years, such as desalination, marine biotechnologies, ocean energy, and seabed mining. There are also innovations in activities that aim to protect ocean health, such as ballast water and invasive species management, waste-to-energy, wastewater treatment systems with low footprint, etc. These activities should be included and measured in the ocean economy accounts. Ecotourism, eco-ports, and eco-ships aim to make these industries more environmentally sound, while ocean energy offers low carbon and renewable energy source. These innovations and emerging markets offer opportunities for investments and business, further contributing to blue economy development

³ UNCTAD 2014; UN DESA 2014.

⁴ See https://www.icriforum.org/meeting/east-asian-seas-eas-congress-2012 and quoted in Elbarvina (2016).

This policy brief aims to raise awareness of the importance of the *blue economy* to Kenya. It does this by defining the *blue economy* and its components to show how Kenya can leverage the *blue economy*'s forward and backward linkages with the various sectors of the economy. It provides reflections on the necessary policies that should be implemented to leverage the *blue economy* for sustainable development and inclusive growth in Kenya and Eastern Africa region. It also serves as a building block for further development of policies to support the blue economy in the region.

2. Defining the Blue Economy

The term "blue economy" has been used in diverse ways. However, it is understood to comprise of a range of economic sectors and related policies that together determine whether the use of oceanic resources is sustainable. The "blue economy" concept seeks to promote economic growth, social inclusion, and the preservation or improvement of livelihoods while at the same time ensuring environmental sustainability of the oceans and coastal areas. It is regarded as the decoupling of socio-economic activities and development from environmental degradation and optimizing the benefits which may be derived from marine resources. The blue economy entails the use of sea and the use of its resources for sustainable economic development. It draws from scientific findings that ocean resources are limited and that the health of the oceans has declined drastically due to anthropogenic activities. These changes are already being profoundly felt, affecting human well-being and societies, and the impacts are likely to be amplified in the future due to population growth.

An important challenge of the *blue economy* is thus to understand and better manage the many aspects of ocean sustainability, ranging from sustainable fisheries to ecosystem health to pollution. Another significant issue emanating from SIDS as they turn to better manage their blue economies is the realization that the sustainable management of ocean resources requires collaboration of likeminded Member States and the public and private sector.

The *blue economy* conceptualizes oceans as 'development spaces' where spatial planning integrates conservation, sustainable use, oil and mineral wealth extraction, bio-prospecting, sustainable energy production and marine transport. The *blue economy* paradigm constitutes a sustainable development framework for developing countries that addresses equity in access to development of and the sharing of benefits from marine resources; offering scope for re-investment in human development.

3. The Blue Economy Components

The *blue economy* has diverse components, including established traditional ocean industries such as fisheries, tourism, and maritime transport, but also new and emerging activities, such as offshore renewable energy, aquaculture, seabed extractive activities, and marine biotechnology and bioprospecting.⁵ A number of services provided by ocean ecosystems, and for which markets do not exist, also contribute significantly to economic and other human activity such as carbon sequestration, coastal protection, waste disposal and the existence of biodiversity. The mix of oceanic activities varies in each country, depending on their unique national circumstances and the national vision adopted to reflect its own conception of a blue economy. The World Bank (2017) highlights that in order to qualify as components of the blue economy, activities need to (as illustrated by Table 1.1):

- Provide social and economic benefits for current and future generations.
- Restore, protect, and maintain the diversity, productivity, resilience, core functions, and intrinsic value of marine ecosystems.

3

⁵ World Bank, 2017.

• Be based on clean technologies, renewable energy, and circular material flows that will reduce waste and promote recycling of materials.

Table 1:1: The Components of the Blue Economy

Type of Activity	Ocean Service	Industry	Drivers of Growth
Harvesting of living	Sea food	Fisheries	Food security
resources		Aquaculture	Demand for protein
	Marine	Pharmaceuticals,	Research and Development for
	biotechnology	chemicals	healthcare and industry
Extraction of non-	Minerals	Seabed mining	Demand for minerals
living resources,	Energy	Oil and gas	Demand for alternative energy
generation of new		Renewables	sources
resources	Fresh water	Desalination	Demand for fresh water
Commerce and trade	Transport and trade	Shipping	Growth in seaborne trade;
in and around the		Port infrastructure	International regulations
oceans		and services	
	Tourism and	Tourism	Growth of global tourism
	recreation	Coastal	Coastal urbanization
		Development	Domestic regulations
Response to ocean	Ocean monitoring	Technology and R&D	R&D in ocean technologies
health challenges	and surveillance		
	Carbon	Blue Carbon	Growth in coastal and ocean
	Sequestration		protection and conservation
			activities
	Coastal Protection	Habitat protection	
		and restoration	
	Waste Disposal	Assimilation of	
		nutrients and wastes	

Source: World Bank, April 2016

As shown by Table 1.1, contribution of marine and freshwater ecosystems includes (World Bank, 2016:2):

- i. **Food security, nutrition and health:** Fish contributes over 16 percent of the animal protein consumed by the world's population and 6.5 percent of all protein consumed, with 1 billion people relying on this source of protein. Fish is also a particularly critical source of nutrition. Even in small quantities, provision of fish can be effective in addressing food and nutritional security among the poor and vulnerable populations around the globe.
- ii. *Livelihoods*: The Food and Agriculture Organization (FAO) estimates that fishers, fish farmers and those supplying services and goods to related industries assure the livelihoods of as many as 660–820 million people worldwide. In addition, women play a critical role in fishery supply chains it is estimated that women account for 15 percent of people directly engaged in fisheries and up to 90 percent of jobs in secondary activities (particularly in fish processing, whether in the formal or informal sector). Oceans and coasts also form the foundation for extensive employment in tourism one of the top five industries in most small island states.
- iii. *Mitigation of climate change*: Oceans constitute a major sink for anthropogenic emissions, absorbing 25 percent of the extra CO₂ added to Earth's atmosphere by burning fossil fuels. 'Blue carbon' sinks like

- mangrove forests, sea grass beds and other vegetated ocean habitats are up to five times as effective as tropical forests at sequestering carbon.
- iv. *Homes and shelter*: Roughly 40 percent of the world's population lives within 100 kilometers of the coast. Healthy coastal ecosystems provide protection from natural hazards, coastal erosion and rising sea levels particularly in SIDS and low-lying, exposed delta regions.
- v. **Sustainable economic growth:** Many developing coastal and island nations depend on tourism and fisheries for a significant part of their gross domestic product and public revenues. Aquaculture is projected to continue to grow rapidly and if done sustainably, can serve as a major source of food and a cornerstone of the blue economy. Advances in seaweed production hold promise for replacing fishmeal and animal feeds with plant materials produced with less pollution. Tourism, and particularly nature-based tourism, also provides an important path towards the sustainable development of marine and coastal ecosystems. Coastal tourism is a key component of small island state economies. The value of nature-based tourism is expected to increase over time as the supply of pristine natural assets declines while demand, which seems impervious to economic shocks, increases with rising GDPs.
- vi. *Trade:* Seafood is the most highly valued internationally traded food commodity in the world, with 36 percent of all fish produced exported in 2013-2014. At US\$139 billion in 2013, the export value of fish is more than double that of the next most traded commodity soybeans. More than half of the fish trade originated from the waters of developing countries.

4. Leveraging the Blue Economy for Inclusive and Sustainable Growth in Kenya

To achieve strong and sustainable economic growth, Kenya is diversifying her sources of growth by prioritizing the *blue economy*. As already noted, the activities of the *blue economy* include harvesting of living resources such as sea food and marine biotechnology, extraction of non-living resources (seabed mining), and generation of untapped resources (energy and fresh water). To date, Kenya has only focused on fisheries both for domestic and export markets.

Fisheries account for only about 0.5 per cent of the Gross Domestic Product (GDP) and generate employment for over two million Kenyans through fishing, boat building, equipment repair, fish processing, and other ancillary activities. The estimated annual economic value of goods and services in the marine and coastal ecosystem of the *blue economy* in the Western Indian Ocean is over US\$22 billion with Kenya's share slightly over US\$4.4 billion (20%) with the tourism sector taking the lion's share of over US\$4.1 billion, according to the Kenya Maritime Authority (KMA) estimates. Marine fishing had an annual fish potential of 350,000 metric tonnes in 2013 worth Ksh90 billion (KMA) yet the region only yielded a paltry 9,134 metric tonnes worth Ksh2.3 billion. Therefore, the full economic potential of marine resources has not been exploited, yet Kenya has a maritime territory of 230,000 square kilometers and a distance of 200 nautical miles offshore.

Leveraging the *blue economy* for sustainable development and inclusive growth in the Eastern Africa region faces challenges of illegal and unregulated fishing, piracy and armed robbery, maritime terrorism, illicit trade in crude oil, arms, drug and human trafficking and smuggling of contraband goods. Other challenges are degradation of marine ecosystems through discharge of oil, the dumping of toxic waste, illegal sand harvesting and the destruction of coral reefs and coastal forests. Furthermore, Kenya is confronted with piracy in the Indian Ocean, illegal fishing and border disputes, the dispute with Somalia over the maritime boundary. The dispute is on a potentially lucrative triangular stretch of 100,000 square kilometers offshore territory that is about 370 kilometers from the coastline, believed to be home to huge oil and gas deposits (Wairimu and Khainga, 2017).

Annex FR10

The foregoing suggests that for Kenya to leverage the *blue economy* for sustainable development and inclusive, thorough feasibility studies need to be conducted to quantify the opportunities of the *blue economy* and maximize returns from investments in the sector. The findings of these studies would assist in exploring the potential for public-private partnerships in areas such as research, product development, concept development, exchange of intellectual property, and financial and human resources development. At the same time, it is important for the country to learn from other countries in the Indian Ocean Region such as India, Mauritius, Seychelles, Bangladesh, Thailand, and South Africa that have taken steps to promote the blue economy bearing of course that the best approach to promote and develop the *blue economy* is to adopt a 'Sub-Regional Approach' initiating development cooperation with likeminded Member States to identify common interests within the *blue economy* drawing on country's legislative framework, the Fisheries Management and Development Act of 2016.

The Fisheries Management and Development Act 2016 provides for the conservation, management and development of fisheries and other aquatic resources to enhance the livelihood of communities that depend on fishing. It gives guidance on the import and export trade of fish and fish products, fish quality and safety among other provisions that support sustainable utilization of marine products in Kenya.

The country should also put in place a *blue economy* conducive fiscal and regulatory environment that would encourage investment in local ship building, repair and maintenance, attract registration of ships in the country and discourage export of maritime services such as insurance and container cleaning.⁶

5. Conclusions and Policy Implications

Sustainable development implies that economic development is both inclusive and environmentally sound, and to be undertaken in a manner that does not deplete the natural resources that societies depend on in the long-term. The need to balance the economic, social, and environmental dimensions of sustainable development in relation to oceans is a key component of the *blue economy*. It is a difficult balance to reach in practice, given that the fundamental nature of the oceans often renders the use of these resources open to all who can access them, eventually resulting in overexploitation and degradation. At the same time, oceans are subject to several externalities such as habitat loss and pollution, often from land-based activities. Because of the combination of these two factors: (i) overexploitation of ocean resources due to conditions of open access and (ii) externalities such as pollution and habitat loss, the oceans are underachieving their true potential in terms of livelihoods, food security and human health, and broad economic growth for many of the world's coastal and island states. According to FAO estimates, approximately 57 percent of fish stocks are fully exploited and another 30 percent are over-exploited, depleted or recovering. Fish stocks are further exploited by illegal, unreported and unregulated fishing, responsible for roughly 11 to 26 million tonnes of fish catches annually, or US\$10-22 billion in unlawful or undocumented revenue (quoted in World Bank, 2016).

The foregoing suggests that for countries that can make the institutional reforms needed to reduce open access to ocean resources and provide secure incentives for users to take a long-term stake in these resources, there is significant potential for the oceans to contribute much more to broad-based economic growth – i.e., a blue economy. At the same time, there are growing examples of institutional reforms and regulatory frameworks that can provide incentives to reduce the threat that externalities like habitat loss and pollution pose to the blue economy. Essentially, because the oceans provide a wide range of goods and services that

⁶ For instance, country loses Ksh 17 billion annually in marine insurance as Kenya largely imports through Cost Insurance Freight (CIF). This results in the country seeking services from foreign firms in the exporting countries.

Annex FR10

depend on the health of the underlying natural systems, returns from investments in healthier oceans is a good proposition.

Coastal and island countries that can introduce such reforms can capture some of these vast economic opportunities that healthier oceans offer:

- i. Provision of seafood from capture fisheries;
- ii. Provision of seafood from aquaculture;
- iii. Tourism and recreation; and
- iv. Marine biotechnology.

In addition to these economic opportunities captured directly by ocean users and stakeholders, healthy oceans provide several public goods that have significant values for economies, such as protection from natural hazards, cultural values associated with oceans, and carbon storage.

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Annex FRII

Sustainable Blue Economy Conference, Final Report, 2019



REPORT ON THE GLOBAL SUSTAINABLE BLUE ECONOMY CONFERENCE 26TH – 28TH NOVEMBER 2018 NAIROBI, KENYA

PREPARED BY SBEC TECHNICAL DOCUMENTATION REVIEW COMMITTEE AT A RETREAT HELD AT LAKE NAIVASHA SIMBA LODGE, KENYA DECEMBER $5^{TH}-9^{TH}$ 2018

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1.0. EXECUTIVE SUMMARY

The global Sustainable Blue Economy Conference (SBEC 2018) was held from 26th to 28th November, 2018 at the Kenyatta International Convention Centre (KICC) in Nairobi, Kenya.

The conference brought together 16,320 participants from 184 countries. They included 7 Heads of State and Government, 84 Ministers, several Heads of International Organizations, Mayors and Governors, the business and private sector, community leaders, the civil society, and women and youth organizations.

The following Heads of State and Government participated: H.E. Uhuru Kenyatta, President of the Republic of Kenya, , H.E. Filipe Nyusi, President of the Republic of Mozambique, H.E. Danny Faure, President of the Republic of Seychelles, H.E. Mohamed Abdullahi Mohamed Farmajo, President of the Republic of Somalia, H.E. Yoweri Kaguta Museveni, President of the Republic of Uganda, H.E. Dr. Ali Mohamed Shein, President of Zanzibar and Chairman of the Revolutionary Council, (Representing the United Republic of Tanzania), and The Rt. Hon. Dr. Saara Kuugongelwa-Amadhila, Prime Minister of the Republic of Namibia.

The theme of the conference was 'the Blue Economy and the 2030 Agenda for Sustainable Development' broken down into nine distinct but mutually reinforcing sub-themes. These were smart shipping, ports, transportation and global connectivity, employment, job creation and poverty eradication, cities, tourism, resilient coasts and infrastructure, sustainable energy and mineral resources and innovative industries, management and sustaining marine life, conservation and sustainable economic activities, ending hunger, securing food supplies, promoting good health and sustainable fisheries, climate action, agriculture, waste management and pollution-free oceans, maritime security safety and regulatory enforcement and people, culture, communities, the inclusive blue economy.

Participants had strategic discussions predicated on the two pillars of production; accelerated economic growth, job creation and poverty alleviation, and sustainability; climate change and controlling pollution. These were held in the context of the Leaders Commitment Segment, nine Signature Thematic Sessions, Business and Private Sector Forum, Governors and Mayors Convention, Science and Research Symposium, Civil Society Forum, Side Events and the Leaders Circle and Closing segments. Partnerships for financing, access to new technologies and innovations; capacity building, integrating women, youth and people in vulnerable situations and opportunities, priorities and challenges in the blue economy sectors were discussed as cross cutting issues.

SBEC 2018 resulted in among others the **Nairobi Statement of Intent on Advancing a Sustainable Blue Economy** (annexed) which contains a number of key political messages. They include the need to; promote action-oriented global strategies that places people and the blue economy resources at the center of sustainable development; promote collaboration for sustainable partnerships and projects in the various sectors of the blue economy; mobilize finance from the public and private sources, promote access to technologies and innovations, share best practices, capacity building; promote gender equality, the role and participation of women and youth in the blue economy; strengthen science and research to generate and disseminate evidence-based knowledge and information as well as to inform policy and decision making; strengthen governance mechanisms; and promote synergies within and between different levels of governments.

Participants made numerous voluntary non-monetary and monetary commitments amounting to approximately USD172.2 billion in the various sectors of the blue economy. The commitments which are annexed to the Statement of Intent cover new partnerships and networks for joint investments in projects, financing, technology development and transfer and capacity building among others.

The outcomes are expected to galvanize and deepen collaboration between and among governments and stakeholders on blue economy, and to help align the blue economy with the needs of the society. If implemented in the needed scale, they can catalyze unlocking of the full potential of the ocean, seas, lakes and rivers and accelerate economic growth, job creation and poverty eradication. Correspondingly, they can amplify ongoing efforts at protecting and conserving the resources for the present and future generations. These are critical steps for a prosperous, inclusive and sustainable blue economy and the success of the UN 2030 Agenda for sustainable development and the SDGs.



2.0. LEADERS COMMITMENT SEGMENT

The segment was held over one and a half days and afforded Heads of delegations and executives of international organizations the opportunity to deliver statements of commitment on sustainable blue economy.

The leaders emphasized the need to enhance global collaboration and create an enabling environment for investments in order to harness the full potential of the oceans, seas, lakes and rivers thus accelerate economic growth, create jobs and fight poverty. They encouraged an inclusive approach in the development of the blue economy sector and promotion of gender equality, the role and participation of women and youth in the blue economy.

Science and research were highlighted as crucial for policy development, implementation and evaluation. Leaders emphasized on an interdisciplinary approach to science and research in generating state-of-the-art evidence-based knowledge and information to inform policy and decision making. This must include the valuation of environmental goods and services in the blue economy.

The leaders were emphatic that the blue economy resources hold great promise and opportunity to build greater prosperity for all. Some of the opportunities highlighted include: deep-sea mining, fisheries development, smart shipping, aquaculture, training more women in maritime related sectors, blue financing, establishment of regional centers for ship owners, research and technology development, mainstreaming climate change and environmental sustainability in the blue economy, developing blue economy observatory mechanism, raising awareness on the importance and value of maritime resources.

They also addressed the need to improve the health of the oceans, seas, lakes, and rivers and the ecosystems which are under increased threats and in decline in many countries and regions across the globe. Some of the threats highlighted include climate change, pollution and waste management, illegal activities at seas including Illegal Unregulated and Unreported fishing, piracy and terrorism, destruction of marine ecosystems and management of resource in areas beyond national jurisdiction. All these challenges require concerted approach in dealing with them at national, regional and global level.

The leaders made commitments to marine and other water resources protection, financing, fisheries development, plastics and waste management, biodiversity and climate action, technical assistance and capacity building, infrastructure development, policy and regulatory measures, maritime safety and security and establishment of partnerships.

3.0. SIGNATURE THEMATIC SESSIONS

There were nine (9) **Signature Thematic Sessions** which ran during the entire Conference and had 70 speakers. The discussions were held in 15 panels which addressed the substantive issues pertaining to the themes. They also addressed the cross-cutting issues on opportunities and challenges, blue financing options, emerging technologies and innovations and inclusivity in the blue economy.

Below are the reports of the signature thematic sessions:

3.1 Smart shipping, ports, transportation and global connectivity

Introduction

In recognition of the immense contribution from maritime transport in the global economy, the 2030 Agenda for sustainable development places the role of seaborne trade as a catalyst for sustainable and



inclusive development. Economies have invested heavily in infrastructural development, operations and capacity development. However, this is not without being faced with a myriad of challenges in the industry, and which this session endeavoured to address.

Objectives

- To devise ways on how countries can attract and maintain sustainable and climate change-proof investments in the underutilized areas of maritime transport;
- To deepen understanding on how economies can enhance environmental and social corporate responsibility and accountability measures;
- To understand how the transportation potential of inland waters can be developed to enhance connectivity in unchartered areas;
- To map out incentives needed to strike a balance between the use of fossil fuels and renewable energy to drive a sustainable maritime transport sector;
- To understand opportunities available for ports and shipping lines to enhance global maritime connectivity and how they can be enhanced;
- To draw measures that are needed to integrate women, youth and marginalized populations into mainstream maritime transport sectors;
- To seek ways of leveraging technology and innovations to promote safe, secure, efficient and sustainable maritime transport.

Key messages

The following were the key messages delivered during the session:

- Promote partnerships for an inter-Africa shipping system and development of African Shipping Lines to create opportunities for wealth creation, employment and income distribution;
- Strengthen cooperation and partnerships between coastal and hinterland countries, shipping lines and other players in order optimally harness the opportunities and enhance efficiency and sustainable global supply chains.
- Upscale technical support and capacity building for shipping and related services, port development and maintenance.
- Encourage sharing and adoption of best practices and promote development and transfer of technologies and innovation.
- Promote international cooperation initiatives and encourage low-emission development pathways in the shipping sector.
- Support LCDs, SIDs and developing countries in building capacity towards reduction of greenhouse gas (GHG) emissions and factoring emissions from the shipping sector in their Intended Nationally Determined Contributions (INDCs) and implementation of the same.
- Promote interconnectivity between land and sea port through corridor development; avoiding land side congestion beyond container terminals.
- Promote corridor concept development and economic zones for intra-market trade (both imports and value addition to exports).
- Encourage Government and relevant stakeholders to prepare the ground for the development, testing and full-scale deployment of Maritime Autonomous Surface Ships (MASS).
- Digitization and advancement in technologies such as robotics, automation and big data will usher structural changes and enable fully autonomous ports and unmanned semi-autonomous ships.
- Promote inter sector research exchanges and impact analysis for better leveraging on the ocean potential and the cohabitation of activities related to coastal and ocean management.
- Encourage more research with regard to engagement of private sector in port management to ensure a win-win situation and a balance between economic development and social impacts.
- Need for development of international framework to regulate and promote the adoption of block chain technology in maritime transport.



Challenges

The following challenges were highlighted:

- Low participation of African countries in the maritime and shipping industry.
- Over-reliance on manual application and paper trail, resulting in long procedures and numerous interveners which involve engagement of different agencies physically, thus creating inefficiencies and losses.
- Slow uptake of technology in shipping and maritime transport and logistics and lack of standard electronic systems.
- · Land-based pollution.
- Disintegrated approaches in the maritime transport sector with Silo thinking mentality in shipping industry as a stand-alone sector instead of integrating into other sectors.
- Inadequate mechanisms to allow for effective incorporation of substantive maritime contract clauses within the block chain technology.
- Increased cyber security threats and risks that could cause disruption in the global supply chain.
- High road transport costs and port charges for land-locked countries.
- Non-involvement of all stakeholders in supply-chain discussions.

Opportunities

- Maritime Autonomous Surface Ships (MASS) developments and implementation present a great opportunity to enable the integration and interoperability of all data points, thus fully supporting a sustainable ocean management approach.
- Close collaboration with IMO and other international partners.
- Cooperation and communication between shipping, ports and logistics to facilitate trade and foster economic growth and prosperity.
- Development of energy efficient technologies, adoption of renewable sources of energy, use of big data and artificial intelligence in the shipping and maritime sector.
- Development of inland waterways, including dredging in lakes and rivers to enhance connectivity.
- Expected growth of world maritime trade volume, due to globalization.
- Improved environmental friendliness and efficiency of shipping.
- Adoption of block chain technology.
- Increase volumes of shipment to attract huge ships at our ports.
- Developing and supporting cabotage to attract investment in national shipping fleet.
- Partnership between the coastal and land locked countries to maximize on benefits of blue economy and improved connectivity.
- Close collaboration with municipalities and cities to sensitize the players to address the challenges of marine pollution.
- Development and expansion of existing dry-docking and other maintenance facilities.

Way Forward

- Extend the discussions to International Maritime Organization committees' discussions, the 2020 UN
 Ocean Conference in Portugal and other forums including or table a resolution at forthcoming
 sessions of the UN Environment Assembly and UN General Assembly.
- Raise awareness to enhance understanding of the Blue Economy concept as well as the relevant international regulations, including recent IMO guidelines on maritime cyber security threats and risk management.
- Develop international framework and industry best practices to regulate and promote the adoption of block chain technology in maritime transport.
- Promote international initiatives and support developing countries, least developed countries and small island developing states in capacity building for adoption of low emission technologies and



development of national and regional strategies for low emission pathways, through support of the Global Maritime Network (GMN).

- Embrace private sector in port management while focusing on balance between economic benefit and social impacts.
- Develop inter-country land transportation systems (i.e. Rail/Road).
- Engage in regional or economic fora on maritime agreements and regulatory frameworks, with a view to enhancing efficient and sustainable maritime trade.

3.2. Employment, Job Creation and Poverty Eradication

Introduction

The blue economy creates employment opportunities across a variety of industries, contributing \$1.5 trillion USD to the global economy. The focus of the session was primarily on creating sustainable, environmentally-friendly jobs in the blue economy sectors towards poverty eradication. Issues that featured in the discussions include: gender equality; appropriate training for careers in the blue economy sectors; and, mainstreaming women and youth in blue economy sectors.

Objectives

- Identify untapped opportunities which can be leveraged to sustainably provide decent work and create wealth within the blue economy.
- Discuss challenges and make proposals for attracting the right labour force for highly qualified technical positions in the blue economy.
- Identifying the existing gaps in knowledge and skills and ways of bridging them.
- Identify existing inequalities and gender-bias in the blue economy sector and how to address them.
- Identify opportunities available and challenges of inclusion of women, youth and vulnerable groups in the blue economy sectors including access to affordable financing and technology.

Key Messages

The following were the key messages delivered during the session:

- Adopt measures, including policies and programmes that will increase the participation of women and youth in the blue economy sectors;
- Bridge the existing skills and knowledge gap by including blue economy in the education curriculum systems, career guidance and sensitization programmes at early levels of education to prepare and develop the interest of young people for careers in blue economy sectors;
- Development of maritime education and training is critical and should be based on comprehensive training, skills and career gap analysis and development of appropriate training policies;
- Improve the image of the industry and profession to attract interest among the youth and women;
- Avail affordable financing for the blue economy sector including for small and medium enterprises;
- Shift behaviors and attitudes with a view to addressing gender-based pay inequalities and current poverty levels 82% of the wealth generated in 2017 went to the richest 1% of the global population;
- Governance of the blue economy should people centered and implemented in a manner that ensures the local communities including women and youth are genuine stakeholders;
- Blue economy must be complemented by equal appreciation of the principles of the green economy as well as circular economy;
- Invest in easily accessible maritime information systems that include tools and capacity building mechanisms to allow planners and policy makers to analyze data and use them for informed decision making;
- Countries that have not yet done so to ratify the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW).

Challenges



The following challenges were highlighted:

- Climate change, marine pollution, unsustainable extraction of marine resources and destruction of coastal habitats;
- · Non-inclusivity, gender inequality and unequal pay for equal work done;
- Lack of proper education and training framework that promotes maritime education and skills for a sector that requires highly skilled labour force;
- Existence of gap between skills and knowledge due to lack of proper curriculum systems, career guidance and sensitization programmes in schools from early levels;
- Non-ratification and domestication of the STCW by some States making it difficult to address training and gender related issues;
- · Lack of commitment from the private sector to support growth of young people in the sector;
- Lack of access to affordable financing for the sector;
- Limited use of technology to modernize the working environment and make it attractive for women and youth.

Opportunities

- With over 60% of Africa's population under 25 years, Africa has a goldmine of human capital that if appropriately sensitized, trained and mainstreamed, will enable the continent to sustainably reap the benefits of the blue economy through job and wealth creation;
- Women comprise half of the global fisheries workforce. If provided with critical tools of trade including
 modern technology, means of communication, affordable financing and market access the could drive
 a multibillion-dollar blue economy and lead to poverty reduction;
- Investment in inland water resources such as lakes and rivers which are underutilised in most least developed and developing countries;
- There is huge potential for future cooperation within the context of (Forum on China-Africa Cooperation (FOCAC) and similar frameworks in such areas as; marine resource utilization, marine industrial park construction, ports and shipping, marine science research and technology, marine tourism, marine energy, marine environment protection, and information sharing and services to improve people's livelihood through job creation and poverty reduction;
- Putting in place a people-centred economy that prioritizes promotion of the interests of ordinary workers, small-scale food producers and vulnerable communities, we have an opportunity to employ blue economy to close the inequality gap.

Way Forward

- Developing and rolling out of maritime education and skills training policies based on comprehensive training, skills and career gap analysis;
- Ensuring inclusivity in policy making and implementation processes of blue economy by incorporating local communities including indigenous communities, women and youth as genuine stakeholders:
- Pursue cooperation regionally and globally for sharing of experiences, information and best practices;
- Invest in easily accessible maritime information systems to facilitate informed and inclusive decision making:
- Address the gender wage and opportunity disparities and mainstream youth participation in the blue economy sectors for sustainability; and Carry the conversation forward with regards to closing the existing gender gap, to the 3rd International Women's Conference on "Empowering Women in the Maritime Community" which will take place at World Maritime University from 4-5 April 2019;
- Create models to allow for affordable and easily accessible financing;
- Promote the transfer and adoption of advanced and easily accessible technologies for the blue economy sector;
- Strengthen cooperation between industry, education providers and public institutions to foster relevant knowledge, skills and capacities particularly among women and youth to facilitate their inclusion in the blue economy.



3.3. Cities, Tourism, Resilient Coasts and Infrastructure

Introduction

As the world continues to focus on the development of the blue economy for sustainable growth, coastal and lake facing cities continue to attract more population, tourism activities as well as other infrastructural developments. This session focused on resilient coastal and lake facing cities infrastructural developments as well as discussions on adoption of best practices on waste manage. New investments in infrastructure and job creation will be needed to keep up with such rapid growth and resource consumption.

Objectives

- To share ideas on sustainable planning for coastal and lake facing cities;
- To stimulating private investment in blue economy infrastructure along the coastal and lake regions;
- To discuss effects of development of coastal cities on different groups in society, such as women, youth and vulnerable people and how to involve them in the planning process;
- To assess the impact of coastal urbanization, tourism and poor waste management on the marine ecosystem;
- To discuss practical solutions to the current urbanization challenges

Key Messages

The following were the key messages delivered during the session:

- Highlighted that the blue economy will double in size between 2010 and 2030 to US \$ 1.5 trillion USD:
- Emphasized that the initiative of harnessing the sustainability of ocean-based economy of developing countries calls for partnerships and collaboration to share data, information and ideas; and to develop better policies:
- Need for sustainable and productive engagement among all blue economy sectors, including tourism inclusive of cultural interactions, fisheries and transport, in order to foster economic development and job creation. This calls for cooperation and integrated policy-making;
- The realization of SDG 14 is highly dependent on realization of SDG 11. The role of cities/urbanization is clearly reflected in the SDG-agenda as central to the blue economy because 50% of the world's population lives within 50 km of water bodies;
- Ensure inclusivity in governance, urban planning, valuing and mapping blue economy assets and in marine spatial planning where all stakeholders are engaged;
- There are changing risk patterns and natural disasters along the coastlines from increasing
 population pressures and climate change. Therefore, there is need to implement resilience and
 mitigation measures, working closely with communities, industries, and academia.
- The world population is set to double by 2050. This offers an opportunity to promote development of smart cities where new technologies will enhance efficiency of infrastructure, industrial upgrading and effective city management of public services;
- · There is need to explore diversification beyond land-based activities to blue economy;
- Enhance value addition for products in the blue economy sector and reduce import-oriented economies and raw commodities exports;
- Strengthen public-private partnerships for sustainable development;
- Priorities an all-inclusive approach for communities to engage in blue economy through training and education.



Challenges

The following challenges were highlighted:

- Increased population and the consequential increased urbanization leading to pressure in the cities
 and towns with the resultant poor urban planning, poor waste management, urban sprawl and
 resource scarcity, inadequate housing, high rates of unemployment, insecurity and inefficient
 transport systems;
- Impacts of climate change on the urban environment characterised by floods, sea level rise and salinization of coastal aquifers;
- Limited inclusion of all stakeholders in policy, decision making and governance matters of the blue economy, leading to limited awareness and participation of communities in the conservation and development of blue economy resources;
- Negative effects of human activities and environmental degradation on marine ecosystems which shrink the potential of the blue economy resources;
- Threat posed by insecurity to development in blue economy related activities;
- Inadequate requisite infrastructure needed to promote blue economy activities;
- Unplanned urbanisation causes serious challenges in harnessing the Blue economy.

Opportunities

- Enhancing diversification of tourism products including cruise ships and integrating coastal tourism and hinterlands as a way of generating spill over into landlocked countries;
- Harnessing the potential of the blue economy in creation of jobs, and in addressing food security, employment and poverty reduction;
- Development of urban and marine spatial planning through an ecosystem-based management to realise sustainable blue economy and to promote sustainable cities;
- Harmonization of existing and new policies and undertaking necessary institutional reforms that will
 enhance sustainable businesses and promote a circular economy for healthy rivers, lakes, seas and
 oceans;
- Education, capacity development, training, collaboration and partnerships inclusive of all stakeholders in the implementation of the blue economy agenda.

Way forward

- Conduct more research and develop innovation on the blue economy while empowering the youth through capacity building initiatives to realise the full potential of the blue economy resources;
- Implement sound urban planning including marine spatial planning to conserve marine ecosystems;
- · Promote tourism through diversification of tourism products;
- Harmonise existing and new policies and undertake necessary institutional reforms to enhance sustainable development;
- Increase investments on infrastructure to enhance potential of blue economy sector;
- Develop early warning systems and resilient measures in coastal cities;
- · Build partnerships and networks to enhance the potential in the Blue economy;
- Prioritise and address waste management in cities by promoting responsible use and disposal;
- Balance the productivity and conservation opportunities in the blue economy for sustainable development;
- Invest in education, capacity development, training, collaboration and partnerships inclusive of all stakeholders in the implementation of the blue economy agenda.

3.4. Sustainable Energy and Mineral Resources and Innovative Industries

Introduction

Blue economy can be leveraged to provide affordable, sustainable and reliable energy and meet mineral



resource needs through tapping into renewable energy sources as well as sustainable harvesting of mineral resources. This presents numerous opportunities for investments in the energy and minerals sector as well as establishment of innovative industries.

Objectives

- To discuss how the world can leverage on the blue economy to achieve sustainable energy goals through offshore energy resources;
- To share experiences and best practices on energy, mineral resources, technologies and innovations for sustainable Blue Economy;
- To evaluate appropriate energy technologies for developing countries to harness the potential of the Blue Economy;
- Provide understanding on the need to consider the balance between the energy and minerals demand and the impacts of resource mining on the environment;
- · To explore opportunities for investment in energy efficient technologies and pollution reduction;
- To explore ways of mainstreaming women, youth and marginalized communities into sustainable Blue Economy Agenda as envisioned in the 2030 Agenda for Sustainable Development and African Union Agenda 2063.

Key messages

The following were the key messages delivered during the session:

- The International Energy Agency estimates that Ocean Renewable Energy could provide up to 400% of the global energy demand, an opportunity which is yet to be fully exploited;
- There is need to plan for the expected increase in demand for critical minerals which is expected to grow by 60% by 2050 and to strike a balance between pursuit of economic development, social considerations and environmental sustainability;
- Interlinkages between the Blue Economy and other existing frameworks on sustainable development including climate change should be fostered;
- Research is necessary to inform policies and activities aimed at harnessing the potential of the Blue Economy;
- Oceans if sustainably managed and developed can promote local industrialization and value chain among member states;
- Investors should take responsibility for preventing and mitigating the risks and negative impacts their activities pose to oceans and other aquatic systems.

Challenges

From the session discussions, the following challenges were identified:

- Absence of interface between science, research and policy formulation to promote knowledge and evidence-based decision making;
- Inadequate capacity (human skills and technology) to tap into the energy and mineral resources within the blue economy sustainably;
- Opportunities under the Blue Economy have not been packaged in a bankable way to attract potential investors hence lack access to innovative and affordable financing for the sector;
- Inadequate or non-existing policy and regulatory frameworks to promote sustainable energy and mineral resources industries within the blue economy sector;
- Low financial resource allocations to support research and development are a major impediment to effective policy making in harnessing the Blue Economy;
- Blue economy offers a lot of opportunities in the deep sea, however no African country has taken up these opportunities.



Opportunities

- Several opportunities for investment in the energy and mineral resources in the blue economy were identified from the discussions. These include;
- The total annual economic value for maritime related activities stands at \$1.5 trillion and is forecasted to reach 3.5 Trillion in 2020 and offers an opportunity to investments.
- The Global Market for Marine Biotechnology is expected to reach 5.9 Billion by 2022. This will create additional demand for global marine bio-technology hence presenting an opportunity for further investments on the same;
- ISA has issued 29 contracts for deep sea mineral exploration, 12 of these to Developing countries and 5 to SIDS offer opportunities for private and public investors to take advantage of the unexplored mineral exploration resources as well as investments in related technology;
- The Blue Economy offers huge potential for renewable energy from wind, tides, waves, biomass sources, salinity gradients and Ocean Thermal Energy Conversion (OTEC); all which require technology to harness sustainably hence this offers opportunity for investment in technology that can support the exploration of these sources of energy;
- The Blue Economy has the potential to act as carbon sinks, bio-prospecting, and hydrocarbon sources, an opportunity which can be explored as an economic activity as well as serve to preserve marine biodiversity.

Way Forward

- Strengthen partnerships, synergies and collaborations between Governments and institutions (both National and International) to support informed decision making and policy formulation to promote sustainable energy and mineral resources and innovative industries within the blue economy;
- Need for Governments to should strengthen mechanisms for regulating and monitoring Marine and other aquatic energy and mineral resources within the blue economy;
- Create necessary Blue infrastructure, invest in relevant technologies, strengthen Financing mechanisms, build human capacity and utilize talent, encourage Research and innovation in order to drive sustainable energy and mineral resources exploration and development of innovative industries within the blue economy;
- Empower women and Youth to play the critical role of championing development of sustainable energy resources and mineral exploration within the Ocean Economy as they account for close to 50% of the world population;
- Apply appropriate innovative technologies to minimize impact to the environment when exploring and exploiting marine resources and non-renewable resources (offshore minerals, oil, and gas)

3.5. Management and Sustaining Marine Life, Conservation and Sustainable Economic Activities

Introduction

The world's aquatic ecosystems provide a wide range of resources and services. They contribute to the livelihoods of humankind and socio-economic development around the world. It is from this that the session brought together scholars, research institutions, policy-makers, development partners, practitioners and private sector to address challenges affecting maximum utilization of aquatic ecosystems while safe-guarding the environment.

Objectives

- To create understanding on how blue growth and blue economy approaches can be used to promote sustainable use of aquatic life;
- To map out strategies for public engagement that are effective in supporting ocean-related education and raising awareness of the natural and cultural significance of marine life;



- To explore policies and programs that are needed to improve understanding on the status and trends of aquatic ecosystems, and incorporate this knowledge (including indigenous knowledge), into decision-making for the blue economy;
- To share knowledge on innovative financial instruments that can drive conservation, resilience and economic growth;
- To define the role that communities can play to help conserve, preserve and protect aquatic ecosystems and map out strategies for community engagement.

Key messages

The following were the key messages delivered during the session:

- Global Ocean Economy was the 7th largest in 2015 compared to the GDPs of countries and it is on its way to becoming the 6th largest;
- Fish provide about 3.2 billion people with almost 20% of their average intake of animal protein (FAO, 2018);
- Globally sixty (60) million people are employed in fisheries and aquaculture (FAO, 2018) out of which ninety (90%) percent are small scale fishers;
- Women make up about half of the workforce in the fisheries sector;
- Oceans absorb 93% of added heat from the atmosphere and 30% of anthropogenic emissions of carbon dioxide and produces about half of the oxygen living things breath;
- An estimated 275 million people live within 30 km of a reef. For 100-year event the top most 1 m of reef provide flood reduction benefits that result in US\$ 130 billion in avoided damages. It is further estimated that 500 million people rely on reefs for food, coastal protection and livelihoods. Reef tourism is approximately worth U\$36 billion;
- The depletion of high-seas stocks negatively impacts economic growth and sustainability of marine species;
- Unsustainable fishing has tripled in the last 30 years and more than US\$80 billion is lost every year from the practice;
- Whereas overfishing is a big problem in some parts of the world, in some countries there is underfishing because of cultural beliefs;
- To ensure success of the blue economy, there is need for genuine collaboration on policy, science and markets.

Challenges

From the session discussions, the following challenges were identified:

- Unsustainable fishing practices driven by inadequate fisheries management mechanisms.
- · Rapidly decreasing fish habitats, including coral reefs and mangroves,
- The number of freshwater species in lakes, rivers and wetlands has been declining. In 2018 the decline stands at 83% decline since 1970,
- Steadily rising ocean temperatures are causing species to migrate to cooler waters thus disproportionately impacting fishing in tropical areas,
- Illegal, unreported and unregulated (IUU) remains a challenge,
- There is a decline in marine species due to inadequate marine protection measures. Only 2.4% of the Marine Area is protected. Over half of 50 Shark species are considered threatened. In addition, the yellow fin tuna stock is in danger of extinction in the next few years,
- It is estimated that at 1.5°C increase in global warming, 90% of global reefs will be lost. An increase to 2°C of global warming will lead to loss of 99% of global reefs. Coral reef crisis undermines coastal defences and food security.

Opportunities

· There are many innovative financing opportunities in support of blue economy e.g., World's first



- sovereign Blue Bond in Seychelles. It raises financing from capital market investors for projects that support the sustainable use of blue economy resources;
- World Bank's "Sustainable Development Bonds" support SDG 6 (clean water and sanitation) and SDG 14 (life below water). The bonds aim to raise at least US\$3 billion;
- In 2015, the Western Indian Ocean economy was the 4th largest in the region with an estimated Gross Marine Product (GMP) of more than US\$ 20 Billion/year;
- Building collaboration between policy makers, researchers, communities and business sector to ensure policies and strategies promote sustainable management and harnessing of blue economy resources:
- Marine Spatial Planning in order to achieve sustainable ecological, economic and social outcomes.

Way Forward

- Adopt sustainable practices in fish production, wild-capture and aquaculture which are not only
 environmentally sound but also good for sustainable economic growth.
- For the blue economy to function sustainably, it is essential to build and transitions to mutually supportive systems through a collaborative framework in policy, science and market.
- A Sustainable Blue Economy needs to be planned. Developing new or intensifying use of existing
 capital or stocks requires assessing their current state, vulnerability to future change, and interactions
 with other stocks/users. This can be achieved through Marine Spatial Planning, Ecosystem-based
 approaches, as well as an inclusive approach.
- Another essential element for the sustainability of the Blue Economy is having quantitative data in order to inform policy making, monitoring and evaluation on the Blue Economy.
- There is need to put in place policies and actions to make sure that while we conserve oceans people's livelihoods are protected.
- Countries should support the World Trade Organization (WTO) to abolish harmful fishing subsidies.
- There is need to link fisheries to implementation of SDGs targets. This is because fisheries address a number of SDGs e.g. Food security, Poverty eradication, employment creation, etc.
- Sustaining marine life and conservation requires partnership between Governments, Civil Society, communities and private sector.
- Adopt an integrated approach in the development of the blue economy as it comprises of different interactive sectors such as transport, fishing, energy and mining.
- Adopt a precautionary principle in the management of ocean resources especially in situations where information for definitive decision making may be insufficient.
- There is need to have a global agreement among the community of nations to combat marine plastics pollution. This may include having alternatives to plastics.
- There is need to follow a ridge to Sea approach in the development of sustainable blue economy.
- To combat IUU, all countries should strive to meet the catch documentation requirements.
- There is need to build capacity for research in Blue Economy to ensure knowledge driven and costeffective solutions and interventions.

3.6. Ending Hunger, Securing Food Supplies, Promoting Good Health and Sustainable Fisheries Introduction

The UN's Sustainable Development Goal 2 seeks sustainable solutions to ending world hunger in all its forms by 2030 and achieving food and nutritional security. Sustainable fisheries, mariculture and aquaculture are well placed to meaningfully contribute to the achievement of this goal.

Objectives

The objective of the session was to:

 Discuss how to leverage the blue economy in ending hunger, promoting good health and sustainable fisheries.



- Explore strategies for boosting the productivity of marine and aquatic food sources,
- To explore ways of mainstreaming the role and contribution of women, youth and people in vulnerable situations in advancing the sustainable blue economy,
- Discuss new and emerging innovations and technologies for value addition, storage and processing fish and fish products.

Key messages

The following were the key messages delivered during the session:

- Ensuring food and nutrition security is a global challenge which should be prioritized through concerted efforts from the public and private sector,
- Appropriate technologies, innovations and sustainable strategies are needed to enhance diversified and sustainable food production within the blue economy sector,
- Restoration and conservation of mangroves, sea grasses is necessary to increase forest cover, reduce soil erosion, land degradation and to recharge water aquifers,
- Appropriate institutional frameworks and mechanisms to promote and protect the fisheries sector based on best practices should be encouraged,
- Effective participation of local communities, women, the youth and people in vulnerable situations should be prioritized as a way of building an inclusive and sustainable blue economy,
- Fisheries and aquaculture are vital components of food supply chain and income generation for local communities. There is need to improve the food chain management in order to reduce waste, enhance efficient supply and promote resource conservation.
- Underdeveloped infrastructure, market malfunctions and conflicts/violence pose threats and impedes
 efforts to promote sustainable fisheries and aquaculture,
- There is need to promote multi-sectoral synergies, for example, between fisheries and tourism in order to provide ready market for fish and related products,
- Proper planning and training of local people is required to promote sustainable aquaculture projects to safeguard ecosystems around such projects.

Challenges

The following challenges identified:

- Loss of aquatic habitats, bio-diversity and shrinking water levels due to pollution and climate change.
- Over-reliance on rain fed agriculture leading to unsustainable production,
- Lack of requisite technology, human capacity and capital to venture into largescale fish farming,
- Depletion of the fish stock due illegal, unregulated and unreported fishing practices,
- Unresolved transboundary disputes in aquatic spaces and porous coastlines.
- Weak or lack of national and regional legal and institutional framework to deal with crimes involving the marine ecosystem, including Illegal, Unreported and Unregulated fishing (IUU),
- Uncontrolled expansion of aquaculture which has negative social and environmental impact.

4. Opportunities

- Sharing of new ideas, technologies, innovations and forming partnerships to attract investments and improve productivity in fisheries and aquaculture,
- Sharing of experiences, best practices on development of policy frameworks and implementation of strategies to enhance food security;
- Development and roll-out of innovative financing products for the fisheries sector;
- Leveraging on scientific research to develop evidence based policies and strategies for sustainably developing the fisheries sector,
- Investment in monitoring control and surveillance technologies to protect the marine ecosystem and prevent IUU;
- Projects that promote community-based management of marine and other aquatic resources,



- Replicate best world practices for local communities' economic empowerment e.g. the creation of a fishing village as tourist attraction in Morocco;
- Enhance resilience against natural disasters to protect costal ecosystems.

6. Way Forward

- Establish effective policy, regulatory and institutional frameworks to safeguard the marine resources,
- Promote technology transfer and capacity building for the small scale fisher-folks to foster their engagement in sustainable fish production and processing,
- Adopt estimation methods such as fish stock assessments, resource system surveys, assessment of young fish, culture survey and frame surveys to achieve sustainability,
- Take measures to curb IUU (Illegal, unreported and regulated) including by implementing the Port State Measures Agreement, and employing monitoring and surveillance technologies,
- Enhance resilience against natural disasters to protect marine and aquatic ecosystems.

3.7. Climate Action, Agriculture, Waste Management and Pollution-Free Oceans

Introduction

Human activities contribute to climate change and pollution of marine and other aquatic resources. This shrinks the potential of blue economy resources to contribute to economic growth and regulation of the environment.

Objectives

The objective of the session was to:

- Discuss the impact of climate change and pollution on the blue economy resources.
- Propose concrete actions to mitigate marine and aquatic pollution
- Explore ways to collaborate with stakeholders in promoting productive and healthy blue economy resources.
- Explore waste management strategies including adoption of technologies that convert waste into resource.

Consider how to support small scale businesses to transition to sustainable enterprises.

Key Messages

The following were the key messages delivered during the session:

- Pollution and climate change constitute the biggest and most urgent threat to the survival of humanity and aquatic life,
- Raising awareness among stakeholders as well as enhancing financial and technical support is critical.
- New economic opportunities can be created by reversing marine pollution and adopting sustainable resource management mechanisms.
- The socio-economic impact of over-fishing by the large-scale fishing industry which is worth US\$3
 billion per year may be ameliorated by removing subsidies thus leveling the playing field to enable for
 more sustainable small-scale fishers,
- Globally, only one-seventh of nearly 80 million metric tonnes of plastic produced each year is recycled. However, more than 12 million metric tonnes end up in the sea each year,
- Collective action by all is vital in addressing marine litter. A framework for action is necessary for waste management including trans-boundary waste management,
- Reducing, recycling and reusing waste has huge benefits. Through transfer of appropriate technologies and capital investments, the industry could be replicated where it is not in use.



- There is need to combat threats to marine ecosystems including but not limited to: invasive aquatic species; nutrient over-enrichment/hypoxia; overfishing; ocean acidification; atmospheric carbon dioxide emissions; biological pollutants; coastal habitat loss and degradation;
- Unsustainable agricultural practices continue to contribute to the deteriorating health of marine and aquatic ecosystems. There is need to change agricultural production practices in order reduce carbon dioxide emissions with a view to achieving the Paris Agreement targets.

Challenges

The Session highlighted the following challenges:

- More than 12 million metric tons of plastic waste ends up in the sea each year. There is evidence that
 the plastics enter the food chain with detrimental effects on human health,
- Unsustainable agricultural practices continue to contribute to the deteriorating health of marine and aquatic ecosystems. There is need to change agricultural production practices in order reduce carbon dioxide emissions with a view to achieving the Paris Agreement targets.

Opportunities

- New technologies and innovations can create new businesses and new opportunities for investment around agriculture and waste management solutions,
- · Scaling up of proven mechanisms for waste management,
- Substitution of unsuitable subsidies with the right incentives that limit GHG emissions,
- Actualizing concepts such as 'circular economy,
- Partnerships and knowledge sharing towards the restoration of degraded ecosystems,
- Collaboration with the relevant stakeholders in key decision making processes on investment in the blue economy,

Way forward

- Forge effective partnerships including at regional and international levels to address threats facing marine and inland aquatic ecosystems, investing in science, technology and knowledge transfer, and setting up of regional and global legal and cooperation frameworks,
- Enhance the capacity through allocation of financial resources and technological support,
- Develop Sustainable Ocean Business Action and Principles, in the lead up to UN Oceans Conference in 2020;
- There is need for regulatory reforms to curb the impact of climate change, agriculture and other landbased pollutants on water bodies;
- Developing countries should consider tapping into global resources that can assist them in efforts to manage plastic waste;
- Restore coral reefs and mangroves to reduce climate disasters along coastlines and to improve resilience of the ecosystems.

3.8. Maritime Security Safety and Regulatory Enforcement

Introduction

A safe and secure maritime domain is essential for international sea borne trade, job and wealth creation as well as sustainable utilization of blue economy resources. There is need for states and non-state actors to work together to secure the maritime domain.

Objective

The objective of the session was to:

Identify effective ways of promoting coordination among states and security agencies,



- Discuss legal and institutional frameworks needed to address various existing maritime threats,
- Assess the preparedness of the maritime industry to anticipate, adapt and respond to challenges
 presented by increasingly dynamic maritime threats
- Identify effective detection, response and enforcement mechanisms for enhancing the health, safety and protection of maritime zones.

Key Messages

The following were the key messages delivered during the session:

- It is imperative to promote multi-stakeholder approaches in responding to maritime safety and security challenges including the judiciaries, legislatures, private sector, civil society and local communities.
- Promote regional cooperation on maritime safety, security and regulatory enforcement,
- · Acquisition of assets should be informed by needs assessments,
- It is important to comply with relevant regional and international instruments,
- Maritime safety and security management should balance competing interests and trade-offs in responding to new and emerging challenges arising from emerging technology, global trade expansion, and environmental developments.
- It is important to establish effective structures for enforcement of safety and security standards as well as preventive and protective measures in respect of marine environment at national regional and international levels.
- There is need to enhance regional cooperation within the Regional Coordination Operation Centre (RCOC) and Regional Maritime Information Fusion Centre (RMIFC) frameworks in building capacities to address maritime threats.
- Efforts should be made to strengthening ocean governance and regulation of areas beyond national jurisdiction.

Challenges

The Session highlighted the following challenges:

- Wide range of maritime security threats including piracy, Illegal, Unregulated and Unreported (IUU) fishing, smuggling of people, arms trafficking, narcotics and other illicit goods, terrorism, cybercrimes, proliferation of Weapons of Mass Destruction (WMDs), threats to freedom of navigation, environmental risks, and natural disasters,
- Inadequate implementation of obligations under the United Nations Convention on the Law of the Sea (UNCLOS) and other international and regional instruments;
- Inadequate collaboration among stakeholders in maritime security sector compounded by overlapping or uncoordinated institutional mandates,
- Lack of or weak law enforcement capacities,
- · Increased innovation and sophistication of crimes committed at sea;
- · Limited funding for the acquisition of necessary infrastructure, assets and equipment;
- Marginal involvement of the private sector and other stakeholders.

Opportunities

- National, regional, and international mechanisms for sharing knowledge and best practices including capacity building in addressing maritime threats,
- Private sector involvement through joint asset ownership and investing in Regional Security Systems,
- · Development of new technologies in maritime space management;
- Collaboration among states to realize a rule based international order including for improved ocean governance:
- · Financing maritime safety and security capabilities,



Way Forward

- Implement commitments made in maritime safety, security and regulatory frameworks,
- Strengthen structures/frameworks for policy formulation, implementation and evaluation,
- Maintain engagements within regional and international mechanisms such as the Indian Ocean Rim Association (IORA), Eastern Africa Standby Force (EASF), Contact Group on Piracy Off the Coast of Somalia, Djibouti Code of Conduct, MASE Programme, African Union and IMO,
- Develop a global strategy that puts people at the center of blue economy partnerships,
- Enhance dialogue on access to new technologies, financing, capacity building and governance among stakeholders to address existing and emerging threats to maritime safety, security and regulatory enforcement.

3.9. People, Culture and Communities and Societies: The Inclusive Blue Economy Introduction

The Session took cognisance from the outset that the skewed development of the blue economy, characterized by the marginalization of women, youth and indigenous communities is a major challenge that must be overcome for the positive effect of the blue economy to be realized globally.

Objectives

The objective of the session was to:

 Exchange ideas on how to grow a people-centred sustainable blue economy including through reforms, application of traditional knowledge to community challenges and diversifying economic activities.

Key messages

The following were the key messages delivered during the session:

- Inclusion of all segments of society is important for the realization of the UN 2030 Agenda for Sustainable Development,
- The economic value generated from the Blue Economy makes it the world's 7th largest economy at USD 2.5 trillion hence the need to ensure its sustainability for the benefit of all.
- Promotion of inter and intra-generational solidarity in the development and utilization of blue economy resources is critical for poverty alleviation and maintaining of a healthy planet,
- Fisheries, mining, maritime transport and logistics are major employers of populations across the world. They should be designed to promote inclusivity and improvement livelihoods,
- There is need to promote local solutions as part of preserving cultural heritage of the local communities.

Challenges

- Inadequate inclusion of local communities and peoples in blue economy,
- Co-management of the blue economy hampered by disjointed and conflicting municipal and international legal frameworks regulating the use of blue economy resources.
- Inadequate and/ or absence of data on blue economy to inform knowledge and science-based decisions and policy interventions.
- Lack of capacity among local communities to participate in the blue economy,
- Destruction of marine habitats leading to loss of marine species,
- Maritime safety and security threats including piracy, illegal, Unregulated and Unreported (IUU) fishing, human trafficking, arms trafficking, terrorism, environmental risks, and natural disasters,
- Inappropriate subsidies that promotes extraction of resources without due regard to conservation.



Opportunities

- Building synergies between traditional blue sectors (fisheries and aqua-culture, tourism, Energy, maritime transport) and other emerging sectors (deep sea mining, bio-prospecting);
- Empowering local communities to diversify into other blue economy activities such as marine equipment repairs and servicing, maritime services, sea ports operations, recreational boating, inland navigation, offshore supply and maritime works;
- Promoting interface between the blue economy and cultural heritage (archeology and anthropological) such as shipwrecks, decommissioned ferries and bridges among others;
- Mapping and protecting shipwrecks has great potential to enhance tourism, create jobs and generate income for local communities:

Way Forward

- Promote people centered blue economy based on a multi-sectoral approaches,
- Strengthen technical assistance, capacity building and financial empowerment of communities to develop sustainable solutions to blue economy.
- Promote co-management models between local communities and relevant stakeholders to enhance ownership and mutual benefit,
- Harness indigenous knowledge in development of archeological maps of local historical sites,
- · Promote shared commitment to social dimensions of development and equity,
- Promote community involvement in marine spatial planning.

4.0 FORUM REPORTS

4.1 BUSINESS AND PRIVATE SECTOR FORUM

Introduction

The Forum was held on 27th November 2018 under the Sub Theme *Investing in the Blue Economy: Promoting* Responsible *and Sustainable Business Practices* and attended by over 3000 participants. A side Business Exhibition was held in parallel from 25th – 28th November, 2018.

The forum explored how to increase partnerships especially in the fisheries, tourism, aquaculture, maritime transportation, renewable energies, marine biotechnology and seawater desalination amongst other products and services.

During the Forum, 35 Bankable Projects worth US\$ 14.3 Billion were packaged as well as 40 pipeline projects from 14 counties. This generated over 15 leads from various companies across the globe.

Objectives

- To explore and showcase investment opportunities in the blue economy sector
- To discuss innovative financing options for the blue economy
- To share ideas on how to build economic growth that is sustainable

4.1.1. New and Emerging Investment Opportunities under Blue Economy Sector

Key messages

- Governments and the private sector should align business plans to the implementation of the Sustainable Development Goal (SDG) 14,
- Adoption of new technologies is critical to minimize disruption faced by traditional maritime industries,
- Partnership with the private sector on smart investments and technologies is necessary to generate employment to an increasing population.



- Investment risk in the blue economy should be made certain to attract more investments,
- Institute inter-disciplinary policies for good governance, innovative financing, reliable data, research and technology and dispute resolution mechanism for blue economy related activities,
- Develop and implement sound macroeconomic policies that inspire confidence in investors.

4.1.2. Economic Growth and the Sustainable Blue Economy

Key Messages

- Globally, fish is the most traded food commodity,
- There is need to invest in various marine projects like aquaculture value chains; protection of corals, reefs and marine habitats.
- There is need to invest in the blue economy to create full and decent employment and sustainable
 jobs,
- The ACP –EU announced financial support amounting to Euros 40 million to support aquaculture value chains; Euros 40 million to protect corals and reefs and Euros 60 million for protection of marine areas.
- Toyota Tsusho Corporation has direct investment in 36 African countries in renewable energy and offshore drilling for oil and gas,
- The role of the private sector in shaping the development of the blue economy is a new frontier to explore. There is need for access to technologies to mitigate risks to marine environment.

4.1.3. The Leaders segment

Leaders exhorted countries to engage in the blue economy especially in development of shipping, energy, offshore mining, tourism, fisheries. Innovation, technology, policy cooperation, science and research for development were identified as critical in the paradigm.

President **Uhuru Kenyatta** stated that Kenya could fast-track the development and integration of expanded ports facilities, invest in fisheries in the Exclusive Economic Zone (EEZ), promote aquaculture and invest in shipping.

President **Danny Faure** of the Seychelles committed to pursuing blue financing mechanisms. He informed that his country has issued the first Sovereign Blue Bond in the amount of US\$15 million in collaboration with Global Environment facility (GEF), the World Bank and the Prince of Wales Trust. He invited other countries to join the process.

He further informed that the Seychelles has introduced Debt-Swap for conservation amounting to US\$ 21.6 million in collaboration with the Paris Club. He committed to participate in all other regional and global processes on blue economy.

Mme **Saara Kuugongelwa**, Prime Minister of Namibia, committed to promote Public Private Partnership (PPP) in the blue economy engagement, promote blue value chain incorporating fisheries and tourism sectors.

She further informed that Namibia also seek to develop sustainable seabed mining (including mineral and fossil fuels) and diversity its tourism products to attract local and foreign visitors. Namibia also intends to desalinate its sea water for agriculture, domestic and industrial use. Namibia will join regional and global process with respect to the blue economy.

4.1.4. Investing in Sustainable Fishing and Aquaculture



Key Messages

- There is need to invest in deep sea fishing, fish processing and associated industries such as feeds, seed, and sea weed production. Aquaculture has provided new opportunity to implement technology (ICT),
- There is need for transboundary cooperation to share research information, innovative financing, and investment in human capital, harmonize policies and regulations, improve transparency, enhance security and determine stock traceability.
- Address unequal access to fisheries, unsustainable fishing, and inadequate data on fish stocks, climate change, inadequate financing, policy gaps and population pressure.

4.1.5. Maritime Transport and Seaborne Trade

Key Messages

- There is need for Africa to create partnership with the public and private actors to develop own shipping fleets to provide opportunities for employment,
- There is need to address carbon footprint in the shipping industry, marine pollution, safety and security, data and information sharing, biodiversity conservation and to develop an integrated global framework for blue economy governance,
- There is need to improve the connectivity between ports facilities,
- There is need to expand marine transport and seaborne trade to generate jobs including in the supporting services.

4.1.6. Innovative Financing Models and Financing Sources for Investment in the Blue Economy

Key Messages

- Traditional sources of financing projects have proven inadequate. Innovative and robust financing models must be adopted for a sustainable blue economy,
- Explore new and diverse sources of finance such capital markets, green bonds, blue bonds, venture
 capital, crowd funding, equities, faith-based financial institutions etc. to bridge the ever-increasing
 fiscal deficits.
- Strengthen direct funding mechanisms to support ocean-related environmental and social impact investments.
- There is need to formalize certain informal industries (small-scale fisheries) and spread the benefits of growth across different socioeconomic groups,
- Larger private sector firms should be encouraged to support informal sectors to avoid 'crowding-out' of vulnerable populations who engage in these activities.

4.1.7. Exhibitions

The business exhibition took place from 25th – 28th November 2018. 130 local and international exhibitors showcased technologies and various products under the blue economy sector.

4.2. GOVERNORS AND MAYORS CONVENTION

Introduction

Urbanization trends reflect that urbanisation is more rapid near large water bodies. It is projected that by 2050 70% of the global population will be living in cities and towns. This is because industrialisation leads to urbanisation and industries require large volumes of water for manufacturing and transporting their goods. Urban space accounts for 54% of the total global population and is forecast to rise to 66% by



2050. This growth needs to be factored in planning and development in order to avert pressure on water bodies and the environment and grow our cities and towns in a sustainable manner. around coastal communities. Discussions focused on creating enabling conditions for sustainable healthier cities, managing and financing cities, and on harnessing opportunities for investments.

Objectives

- To discuss how to build better and more sustainable towns and cities around the blue economy,
- To explore options for financing investments in the blue economy,
- To discuss management of challenges affecting cities and towns such as climate change and waste management,
- To share knowledge on new and emerging technologies and innovations to help accelerate sustainable development in the blue economy sector,
- To build partnerships that maximize the opportunities in the blue economy sector while protecting the
 environment.
- To share experiences and best practices on how better governance can improve the economic and social transformation of coastal communities

Key Messages

Key messages that emerged from the discussions:

- Explore options for innovative ocean financing such as blue bonds to fund the development of sustainable blue economy,
- Promote development of smart cities to enhance efficient public services,
- Promote inclusiveness in the governance, urban planning, valuing and mapping of the blue economy assets and in marine spatial planning,
- Promote public-private partnerships for enhancing the blue economy agenda at local, national and regional levels.
- Prioritise waste management to reduce pollution ion cities and related blue economy resources,
- SBE 1000 was launched as the premier Forum for Mayors and Governors to address the opportunities and challenges of blue economy.

Challenges

- Population pressure leading to challenges such as poor urban planning, poor waste management, urban sprawl and resource scarcity, inadequate housing, high rates of unemployment, insecurity and inefficient transport systems,
- Climate change leading to floods, sea level rise and salinization of coastal aquifers,
- Limited awareness of blue economy issues particularly at grassroots level,
- Competing and often overlapping roles and functions between local and national governments leading to confusion and duplication of efforts.

Opportunities

- Harness the potential of the blue economy to create blue and green jobs,
- Develop urban and marine spatial planning through an ecosystem-based management approach,
- Harmonize policies and institutional functions to enhance sustainable businesses and to promote a circular economy,
- Promote education, capacity building training, collaboration and partnerships at national, regional and global levels inclusive of all stakeholders from private sector, civil society organizations and local communities in the implementation of the blue economy agenda
- Adopt smart technologies for cities and encourage innovative financing mechanisms such as debt



swaps, blue trust funds and blue bonds to support implementation of the blue economy agenda.

Way Forward

- Identify champions for the Sustainable Blue Economy (SBE1000) to inter alia identify a mechanism or encourage use of existing mechanisms to enable local governments tap into the commitments made by various entities during the Convention;
- Share relevant information on the outcomes from the Convention.
- Conduct more research and develop innovations to empower people through capacity building initiatives on the blue economy resources,
- Implement sound urban planning including marine spatial planning to conserve marine ecosystems and enhance collaboration between governments and stakeholders,
- Promote tourism through diversification of tourism products
- Harmonise policies and undertake necessary institutional reforms to enhance sustainable blue economy,
- Increase investments on infrastructure to enhance efficient movement of people, goods and services, and to reduce pollution,
- Develop early warning systems and resilient measures in coastal cities.
- Promote partnerships with stakeholders to address waste management in cities,
- Invest in capacity building of relevant stakeholders in the implementation of the blue economy agenda.

4.3. SCIENCE AND RESEARCH SYMPOSIUM

Introduction

Science and research plays a critical role in generating knowledge, information, technologies and innovation. The development of a sustainable blue economy requires evidence based science to inform policy and strategy formulation and implementation.

Objectives

- To share new and cutting-edge technological advances,
- To examine the contribution of academic and research institutions to sustainable blue economy,
- To identify areas of possible synergies in science and research pertaining to sustainable blue economy,
- To establish new networks, partnerships and collaborative programmes as well as to strengthen existing ones,
- To consider policy measures for strengthening research, technology, capacity and innovation in the blue economy sectors.

Key Messages

The following key messages were delivered:

- Developing solid science on blue economy requires building of relevant networks within and among
 the academia and industry players. A multi-disciplinary and trans-disciplinary approach backed with
 allocation of requisite financial resources is necessary,
- Building academic entrepreneurship and development capabilities should be encouraged to improve the success rates of proposals and scientific contributions to the sectors,
- There is need to invest in data revolution to improve social, economic and environmental conditions of all using the blue economy resources,



- Marine spatial planning is critical for enhancing a sustainable approach to adaptive management of marine ecosystems,
- A multilateral research infrastructure should be established to address common challenges, shape international partnerships and create monitoring systems for tracking baseline data in order to strengthen regional and specific country capacities,
- Policymakers and researchers need to work together in order to improve the success of policies and strategies on development of a sustainable blue economy,
- There is need to take social science and ecosystem-based approaches to restore marine ecosystems and to support community projects that enhance blue economy;

Challenges

- Lack of coordinated approach in planning and implementation of blue economy related matters,
- The ever evolving forms and scope of maritime insecurity including intrinsic definitional problems in the treaties, pose various challenges to existing mechanisms for addressing them,
- The negative impacts of climate change on blue economy resources is increasingly exerting further stress on marine ecosystems and loss of biodiversity,
- Limited sharing of data, information and intelligence and other outcomes of research processes,

Opportunities

- Partnerships for science and research in the various sectors of the blue economy,
- Developing simple innovations to address complex blue economy challenges such as pollution and climate change.
- Bottom up approaches in mainstreaming communities involvement in the blue economy
- Implementation of international and regional agreements related to Blue Economy.

Way Forward

- Invest in science, research and development to generate data, knowledge, information, new technologies and innovations for sustainable blue economy,
- Create of an international platform for blue economy data generation and sharing to address common challenges strengthen regional and specific country capacities,
- Develop appropriate models and incentives to drive research based industrial development,
- Create a blue economy facility to foster international partnerships and strengthen monitoring systems for tracking baseline data,
- Integrate the blue economy in the education curriculum to bridge the skills and knowledge gap on sustainable blue economy,
- Foster collaboration between relevant stakeholders to develop evidence based polices and market informed strategies,
- Develop simple innovations to address ecosystem stresses and other complex blue economy challenges such as pollution and climate change and overfishing
- Develop dynamic approaches to enhancing maritime safety and security and strengthen existing international collaborations in maritime safety and security enforcement.

4.4. CIVIL SOCIETY FORUM

Introduction:

Civil Society Organizations (CSOs) have a critical role to play in the blue economy agenda. The forum was convened to discuss how CSO can partner with governments and other stakeholders in the



development of a sustainable blue economy. The forum adopted the Nairobi Declaration of the Civil Society Forum on Sustainable Blue Economy Agenda.

Objectives

- Build a common understanding of the blue economy approach,
- Promote structured engagement between civil society organizations and various stakeholders in the blue economy,
- Build partnerships and synergies between and among stakeholders including the public and private sectors in the blue economy,
- Promote the role of Civil Society and their contribution in the implementation of the sustainable blue economy.

Key Messages:

Key messages during the engagement include the need to:

- Promote coordination, coherent linkages and synergies between Government, Civil Society Organizations, and private sectors on Sustainable Blue Economy,
- Encourage good governance to create job opportunities and develop trainings in the blue economy sector
- Create awareness on the benefits of sustainable blue economy.
- Advocate for allocation of resources to support the related work of the civil society organizations,
- Promote inter sectoral and cross cutting research and impact analysis to better leverage on the
 potential of the oceans,
- · Build knowledge and information sharing mechanisms and platforms should be established,
- Promote a sustainable eco-centered blue economy based on people and local community projects,

Challenges:

The following challenges were identified as hindering the work of the Civil Society Organizations in the blue economy sector:

- Inadequate financial resources to fund programs and projects,
- Lack strong governance and oversight structures,
- · Lack of relevant technologies and capacity,
- Limited access to relevant information on status of the blue economy resources.
- Weak collaboration between Governments and civil society organizations,
- Absence of adequate policies and incentives for environmental conservation and sustainable use of oceans, lakes and rivers.

Opportunities:

The session identified the following opportunities for collaboration with stakeholders:

- To increase areas under marine and riparian protection,
- To increase participation of local and indigenous communities including in project formulation and execution,
- To engage the youth including through training in social values and sustainable use of inland waters and oceans,
- To work on sustainable business models for blue economy,
- To engage the private sector to facilitate access to resources and markets

Way Forward

• The Private sector should be engaged in the development of an international marine mitigation bank based on a concept of one-ton marine life. This would become a credit which can then be sold to anyone who impacts the marine environment,



- AU-ECOSOCC should help in co-ordination of country-level blue economy priorities by supporting the
 planning and coordination of activities of regional CSOs including at the upcoming UN 2020 Ocean
 conference and implementation of AU Maritime Strategy in line with the Agenda 2063,
- Country level CSOs should sensitize and actively engage communities in the participation of Blue Economy related activities such as primary school activities, community beach patrols etc.,
- Form thematic technical working groups with wide stakeholder membership to among others explore new forms of investments through innovative products such as blue bonds and impact funds,
- Establish a blue economy finance principle through the formation of the first blue economy finance framework,
- Form a Blue Economy working group for Indian Ocean Rim Association,
- Sensitize communities to embrace fish and sea food to improve on food and nutritional security as well as to diversify the sources of livelihoods,
- Undertake science, research and development to provide evidence-based data towards informed investment decisions,
- Encourage mechanisms to promote robust systems that connects the blue economy with communities,
- Collaborate with the government to promote transparency and accountability and inclusion of all through bottom-up approaches.

4.5. DIASPORA FORUM

Introduction

The Diaspora kas a key role in advancing sustainable development including through investments, knowledge and technology development and transfer and through remittances among others. The blue economy is an area that this segment of investors can tap into.

Objectives

• To exchange ideas on the contribution of global diaspora to the development of a sustainable blue economy with specific focus on investment and business opportunities, skills and knowledge development, and promotion of good governance and leadership.

Key messages

The following key message emerged from the forum:

- The global diaspora should collaborate with stakeholders to promote development of a sustainable blue economy through investment and transfer of their unique expertise, knowledge and experiences,
- The global diaspora should utilise their networks to galvanize support within and beyond the countries of origin and residence in support of blue economy.

Challenges

The key challenges that were discussed include:

- Lack of coordinated engagement of the diaspora in support of national and global development,
- Lack or poor implementation of national diaspora policy frameworks to harness diaspora contributions to development



Opportunities

The following opportunities were identified:

- Partnership with the diaspora to exchange best practices, skills, knowledge, expertise, innovations and networks acquired in their countries of origin and residence,
- Create incentives for diaspora involvement in trade and investments in the blue economy

Way Forward

• The global diaspora should actively collaborate with stakeholders in the development of the blue economy including through investments and participation in forums that advance the blue economy agenda.

4.6. YOUTH FORUM

Introduction

The youth possess the energy, knowledge and talents that can be harnessed to drive the growth of sustainable blue economy. Their inclusion in the relevant processes that create full employment and decent work for all is even more critical especially in turning the potential youth bulge into youth dividend.

Objectives

- To deepen the understanding of the youth on Blue Economy related matters;
- To identify opportunities that are available for youth engagement in the Blue Economy;
- To share best practices globally with youth on the sustainable Blue Economy use;
- To explore challenges and threats to the Blue Economy.

Key messages

The Youth can be effective agents of change. They should be provided with enabling environment to tap into the blue economy resources and to innovate, create employment and jobs as well as to enhance their socialization and cross- cultural integration. These are important especially in the developing world where there is need to turn the potential youth bulge into youth dividend.

Challenges

- Inadequate opportunities for specialized training in the blue economy sectors,
- · Limited access to investment resources,
- Limited inclusion of the youth in the development of policies and decision- making on blue economy,
- Limited capacity building in business development and entrepreneurship in the blue economy sectors

Opportunities

The following opportunities were outlined:

- To support the youth to generate new and innovative jobs
- To support the youth to apply dynamic approaches to enhance cross- cultural collaboration in the development of policies and decision-making on blue economy,
- To support the youth in capacity building especially in developing and implementing competencybased curriculum in the blue economy sectors,
- To encourage the youth to create awareness through the development of an information portal on



blue economy opportunities for the youth.

Way Forward

- Develop an inclusive and innovative youth-based education curriculum responsive to the productive and conservation demands in the area of sustainable blue economy,
- Governments should develop or strengthen as appropriate governance frameworks in support of sustainable blue economy,
- Governments should allocate resources to support youth affirmative action on the sustainable blue economy.

5.0. SIDE EVENTS

A total of 64 side events on various thematic issues were organized by governments, the private sector academia and the civil society organizations.

Key Messages

The following were some of the key messages:

- All stakeholders should be involved in planning and execution of blue economy policies and action plans.
- Coastguard services are critical to securing the maritime domain,
- Partnerships and capacity building are necessary to enhance maritime safety and security,
- As the second leading polluter industry in the world, the fashion industry should embrace blue fashion to address pollution,
- There is need to boost current initiatives on plastics management,
- The maritime industry should formulate sound business principles to guide the business community and help deliver the sustainable development goals,
- States should enhance implementation of policies and international frameworks for sustainable blue economy,
- Proper management of fisheries including through processing and storage is necessary to avoid postharvest losses, and to end hunger, secure food supply and promote good health,
- Empower women to participate in blue economy through capacity building and financial support will reduce the gender gap and enhance inclusive economic growth.

6.0. COMMITMENTS

During the Conference several commitments were made in diverse areas as listed in the annex.

7.0. LEADERS CIRCLE AND CLOSING

The Segment was a wrap up of the conference.

Key Messages

- The sustainable development of the blue economy resources has the potential to galvanize the global community for a common course including achievement of the UN 2030 Agenda and SDG 14,
- The ocean, seas lakes and rivers guarantee life. Collective efforts are critical to successfully enhance the opportunities as well as tackle the challenges of blue economy resources,
- There is need to strengthen global conversations and collaboration among all stakeholders,
- The connectivity of oceans, sea, lakes and rivers is evident. A comprehensive and integrated approach to the management of the blue economy resources is critical,
- Ecosystem changes are happening now and implications will be severe both for economic



- development and sustenance of healthy marine ecosystems. There is need for urgent action,
- Plastics pollution including microplastics have long-term impacts on marine life. Simple and bold actions with profound impacts are necessary. Governments leadership is critical,
- Curbing illegal unreported and unregulated fishing is necessary to restore fish stocks and to
 produce maximum sustainable yields. There is need for states and stakeholders to comply with
 port state measures agreement.

During the segment, the summary of the **Nairobi Statement of Intent on Advancing the Global Sustainable Blue Economy** (annexed) was presented and endorsed.

8.0. CONCLUSION

There were consistent messages throughout the conference. Participants acknowledged the critical role the ocean, seas, lakes and rivers play in realizing the 2030 UN Agenda and the SDGs. At the same time, they expressed concern on the continued negative impact of human activities on the viability of these resources, the survival of the life they support and the need to take urgent action.



Annex FR12

Lamu Environmental Protection and Conservation and Save Lamu, Lamu County
Biocultural Community Protocol (BCP), 2018 (Extracts)

THE LAMU COUNTY BIOCULTURAL COMMUNITY PROTOCOL



THE LAMU INDIGENOUS COMMUNITY AND THEIR RIGHTS TO THEPRESERVATION OF THEIR NATURAL RESOURCES, CULTURES, HERITAGE AND MANAGEMENT OF BIODIVERSITY



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LIST OF ACRONYMS AND ABBREVIATIONS

BCP Bio-Cultural Community Protocol

BMU Beach Management Unit

EIA Environmental Impact Assessment

EPR Environmental Project Report

ERC Energy Regulatory Commission

ESIA Environmental and Social Impact Assessment

GIZ German Development Agency

GoK Government of Kenya

LAPSSET Lamu Port Southern Sudan and Ethiopia Transport Corridor

MUHURI Muslim Human Rights

NEMA National Environment Management Authority

NET National Environment Tribunal

RAP Resettlement Action Plan

UNDP United Nations Development Programme

UNFCCC United Nations Framework Convention on Climate Change

DATA COLLECTION:

The following groups were involved in the data collection for the BCP and Save Lamu would like to acknowledge the tremendous work played by them;

Association of Wildlife and Environmental Resources (AWER)

Faza Youth Action Group

Lamu Council of Elders

Lamu Conservation and Development Network

Lamu Environmental Protection and Conservation

Lamu Marine Forum

Lamu Youth Alliance

Muslim for Human Rights (MUHURI), Lamu

Sauti Ya Wanawake

Shungwaya Welfare Association

Wanaharakati Okoa Lamu

Beach Management Unit (BMU), Lamu

Lamu-Coastal Indigenous People's Rights for Developments (LCIPRD)

Shimo la Tewa creek Conservation and Awareness Initiatives

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GIZ

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1.0 EXECUTIVE SUMMARY

Lamu County lies on the coast of Kenya and is home to a number of indigenous communities who have carved out distinctive livelihoods over the centuries from their rich and diverse environment, including a coast and marine ecology, forests, grass and agricultural lands.

Our land has abundant animals and animal-products, marine resources, forest, and mineral resources. Lamu County has a long coastline that is highly suitable for harvesting marine resources, transport, and tourism. Our mainland has rich soils that have been highly suitable for agriculture and continues to maintain rich indigenous forests that we depend on.

According to the 2009 Census, Lamu County has a total population of 101,539¹ people, of which those who are considered to be indigenous to the County are about 56,000. We the indigenous communities of Lamu County are highly multi-racial and include the Bajun, Swahili, Sanye, Aweer (more commonly known as the Boni), and the Orma.

More recently, other Bantu communities including the Pokomo, Giriama, and other Mijikenda sub-tribes have also migrated into the area. Other communities from around Kenya have also recently immigrated to Lamu as part of a pursuit of the richness of opportunities that Lamu has to offer, which has turned the old Lamu port city into the cosmopolitan we know of today..

The Bajun community is fisher folk, farmers and mangrove cutters who have lived on the mainland and on the islands of the Lamu Archipelago for centuries. The Bajun are complimented by their hunter and gatherer neighbours, the Sanye and the Aweer (more well known by the name Boni), who have inhabited the forest area and foraged in the mangrove creeks since ancient days. The Orma, another indigenous community, are pastoralists. Their rangeland covers three counties including Lamu, Tana River, and Garissa as they follow pastureland for grazing their cattle, goats, sheep and camel, an important aspect of the regional economy. There are also communities that identify themselves as members of old city-states that held great political sway in the geopolitics and international trade of the area in the 15th to 19th centuries. These inhabitants call themselves: Wa-Siyu, Wa-Pate, and Wa-Amu (the people of Siyu, Pate and Lamu). The Wa-Siyu and Wa-Pate are predominantly farmers and the Wa-Amu, living in the largest town in the county are traders, farmers, and fishermen.

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The indigenous communities of Lamu County have adapted to wisely utilize the natural resources of their habitat. These economic niches are highly connected to the balance in biodiversity in the Lamu region and Kenya as a whole. These connections are strengthened by shared religious practices, intermarriage, and trade amongst these communities.

These communities have participated in managing these resources over the centuries, conserving them until the present day. Yet, today their livelihoods, which depend upon the fragile environment, are threatened by numerous development projects in the region including the Kenya Government's LAPSSET project (the Lamu Port, South Sudan, Ethiopia Transport corridor), the planned Amu coal power plant and oil and gas exploration in the region as part of the state's Vision 2030.

The LAPSSET Project will consist of a standard gauge railway line, a 32-berth port, a superhighway, a regional international airport, an ultra-modern tourist resort city, a fiber-optic cable and an oil refinery and an oil pipeline constructed to link Lamu to Juba and Addis Ababa as well as Special Economic Zone for industries. Through the media, we found out about the Government of Kenya's (GoK's) push for building the project despite our lack of knowledge of the proposed plans, project feasibility, or adequate measures to offset the negative environmental and social impacts.

The GoK, through the ministry of Energy, has also embarked on an ambitious plan to generate 5,000 MW of electricity to boost it's 2030 development goals. This will include 1050 MW generated from coal power. The proposed site for the coal plant is at Kwasasi in Hindi Division, Lamu County. The site is located north of Lamu Island on the western shore of the Pate Channel bordering the Dodori and Ndununi Creeks. It is 21 km from Lamu Town and a mere few kilometers from Pate Island. Lamu town ranks as the oldest permanent Swahili settlement on the East African coast and a UNESCO World Heritage Site. Pate Island is a buffer zone to the World Heritage Site and has many archaeological sites administered by the National Museums of Kenya.

We, the community of Lamu are against the construction of a coal plant in Lamu County, or for that matter, anywhere else in Kenya. We understand that there are other means of generating electricity, some of which are clean and from renewable sources, like the power from the wind, the sun,and ocean waves.

The coal plant directly threatens three main economic activities. These are fishing, farming and tourism, as well as other minor economic activities, including mangrove harvesting, boat building, construction of houses and other buildings and furniture for our homes. These industries have injected billions of shillings into the Kenyan economy, boosting her revenue.

We understand that the Lamu coal plant presents a serious threat to our environment and local communities because of its ash waste, air pollution, and cooling system that will pour hot water into our bays and channels. We know that the coal plant will have a long-term negative impact on our natural resources, which help us to sustain our cultural and economic activities in the entire Lamu Archipelago.

To address our concerns about development without adequate consultation and consent, we developed this Lamu County Bio-Cultural Community Protocol (BCP), a document that sets out traditional mechanisms for decision-making, for sustainably utilizing our natural resources and our concerns of the LAPSSET, coal plant and oil and gas exploration in our County. The BCP was developed through community participation and carried out by Lamu Environmental Protection and Conservation and later Save Lamu. Both groups are community-based organizations who worked with community volunteers who recorded, documented and consolidated the information collected here from the Bajun, Aweer, Sanye, Orma and Swahili communities in over 46 villages in Lamu County. The process began in 2010 and continues to date. Our concerns were first set out in the Fort Zahidi Ngumi Declaration of 2009.

2. 0 INTRODUCTION TO THE BIO-CULTURAL COMMUNITY PROTOCOL

The Lamu County Bio-Cultural Community Protocol (Lamu BCP) is the work of many hands and minds. It is a communal document that lays out the traditional knowledge and indigenous methods of natural resource management of the diverse communities who claim Lamu as their ancestral home, the communities include the Orma, Sanye, Aweer, Bajun and the 'Swahili'. While the Bajun are usually considered to be a part of the Bantu Swahili ethnic group, as the largest subset of the Swahili. The BCP is based on self-identification of the communities rather than academic definitions. In Lamu the Bajun, compared to other ethnic group have more distinct livelihoods from other Swahili groups, especially in Lamu and Manda Islands and for the purposes of distinction, the Bajun are described separately in this BCP and identified as a distinct ethnic group for the ease of differentiation.

We, the indigenous communities of Lamu County, are proud that we have conserved Lamu's environment and cultural identity for centuries—a fact acknowledged by the Government of Kenya by way of recognizing our historical sites and monuments, forests and marine reserves and UNESCO by designating Lamu as a World Heritage Site, worthy of preservation in 2001.

has rich soils that have been highly suitable for agriculture and continues to maintain rich indigenous forests that we depend on.

There are three major types of soil in Lamu County i.e. red loamy soil, sandy soil, and rocky soil. The red loamy soils has high fertility and are found mainly along the low land of Witu, Mpeketoni and some parts of Amu and Kiunga Division, these soil support food and cash crops such as maize, beans, cassava, and cowpeas. The sandy soils, which have moderate fertility are found in the Divisions of Amu, Faza, and they support the cultivation of coconut palms, maize, and cassava.

6.0 OUR RELATIONSHIP WITH NATURAL RESOURCES

We, the community of Lamu, rely on our natural resources to survive – for nourishment, shelter, healthcare, to worship in our sacred spaces, and to continue our cultural traditions. Our environment is our wealth – when our environment is healthy, we are healthy. When our environment suffers, we suffer.

Many of us in Lamu are able to rely on our nature-based livelihoods for our survival. Our ancestors before us also relied on the areas' natural resources for their livelihoods. It has been our most reliable service provider. Within our community in Lamu, we have a number of different livelihood groups that are linked and intertwined. The ethnic groups within Lamu often share livelihoods — and because of this, communities live in peace as they are intertwined with an interdependency that has been crucial for survival.

6.1 MARINE-BASED LIVELIHOODS

Traditionally, we the Bajun and the Swahili are fisherfolk, though the Sanye, Aweer, and Orma are also now more involved in local fishing, in both fresh and salt water, to supplement their livelihoods. We are involved in fishing, or in Kiswahili, prawn fishing and crabbing, and diving for lobsters, sea cucumbers and other marine animals.¹³

We rely on a variety of land and water-based natural resources for our livelihoods. We fish a variety of species for food and to sell, including mostly fish such as mullet, rabbitfish, groupers, parrot fish, snapper, cavalla jacks, tuna and rock cod. We also catch crab, lobster, shrimp, prawns, calamari and octopus and various types of sting rays. We further go fishing for sharks, using the whole body of the fish for various uses including food and its oil as a wood preserver for our

¹³The district (Lamu County) reportedly produces over 1500 metric tonnes of fish annually, valued as Ksh 111.8million, 75% of which comes from marine fishing. See Office of the Prime Minister, Ministry of State for Planning, National Development and Vision 2030, 13.

¹⁴See Office of the Prime Minister, Ministry of State for Planning, National Development and Vision 2030, 21.

dhows. The oil helps to keep insects from boring into the wood and to make the boat more buoyant in the water. We used to harvest salt from the sea to preserve the fish that we catch before we depended on retail shops.

Over the generations we have conserved our fish stocks in different ways, depending on the season. During the " " (summer) " or " season, we use " " (hand fishing lines), " (traditional fishing traps, that are made from , a part of the coconut tree), " " or commercial, large-holed (nets) so that fingerlings can escape) and " " (made from the tree). We also fish with long lines in our traditional dhows made of wood for deep sea fishing. In order to preserve the coral, which is abundant with different types of fish we use line fishing and restrain from dropping anchor on the reef. We also conserve fish by selecting different zones to fish at different times.

We used to know how to make dhow boats well, but the knowledge is being lost as those with this traditional knowledge become fewer and the youth become less interested.



Picture 8: Bajuni fishermen on a boat going to fish

We currently experience a number of issues that affect our livelihoods. These issues include: decreasing fish stocks; increased competition for fish and other food sources (not just from locals but also from commercial trawlers and fisherman from other places, such as Tanzania, who do not use sustainable fishing methods), increased insecurity in the Lamu archipelago making it difficult to fish at times that are good for fishing that impacts our livelihoods; and very little support from the government for our fishing industry even though there is huge potential. Local fisher folk work with small wooden sailboats mostly and we do not have modern fishing gear or equipment. This limits the size of our catches and, because of a lack

of a structured market, middlemen exploit the poverty of local fisherfolk by making a large profit from the fish caught.

The port and coal projects are going to affect our fishing grounds, including the areas in the vicinity of Manda Bay and in the creeks off the Manda Bay channel including Dodori and Ndununi Creek. These areas are important to us for fishing and shellfish of all kinds. While it may increase our access to international markets, the port project will also make it difficult for our community to sustain their livelihood and it is likely pollution will also have an impact on the quality of the mangroves that provide the fish breeding grounds in the Lamu Archipelago, especially in the area of the port and its infrastructure. We fear that their environment will no longer support the fish breeding sites as they are now. We also fear the emptying of dirty bilge water from the ships that will come into the port. This waste product has chemicals in it that make it harmful to the mangroves that grow along the coast. The mangroves protect our shores from erosion and tsunami waves as well as nourish the marine life that lives in its habitat.

The port will also affect the number of predator fish who come into the channels where we do our fishing during the monsoon winds known as kusi. With the dredging of Manda Bay to allow for larger ships and the refuse that is normally tossed from these large vessels, the number of predator varieties of sharks will increase. This will cause increased attacks with lobster divers, fishermen and in the tourism sector as well. We fear that their numbers will create dangerous shark-infested waters like the ones in Mombasa. They will also deplete the fish in those areas.

The Amu coal power plant will endanger the marine life as a result of volumes of water being sucked in from the bay to cool their machinery and returned to the bay as heated water. This cooling system will cause death to countless marine animals by vacuum pressure pulling water in and taking with it large numbers of fish, shellfish, and their eggs which will kill them through heat, physical stress, or by chemicals used to clean the cooling system. We understand that larger marine life may be killed or injured when they are trapped against screens at the intake point.

6.2 MANGROVES AND TIMBER HARVESTING

We, who are involved in mangrove and timber harvesting, rely on these natural resources for our livelihoods. Our County is rich in mangrove and terrestrial hardwood forests. We are traditionally from the Bajun and Swahili communities and we have used these resources to build our houses and mosques, to construct dhows, to make furniture and to export to other areas on the coast for building materials. Before Kenya criminalized the trade of mangroves in

 1982^{15} , we used to be one of the largest traders of mangrove to the Middle East.

There are several types of mangroves in our area: These include "mkoko""mwia", " ", " ", " ", " ", " " and " ". Each of these varieties has a purpose and a time for cutting them. Our mangrove forests in the County are healthy and well preserved spanning 37,350 hectares, which makes up almost 61% of the mangrove in Kenyan, 3% of forest cover¹⁶, and more than half of the total forest coverage in the County. These forests are the best preserved and healthiest on the whole coastline of Kenya.



Picture 9: Lamu County has the highest mangrove concentration in Kenya

Our terrestrial forests have hardwoods such as ', ', ' and '. Each of these types of wood has their own special use. Today, these woods have been overexploited by the growing demand and population increase of outsiders who use power machines to cut these indigenous hardwood trees.

Over the generations, we have traditionally conserved and sustainably used these resources by selectively cutting these trees (harvesting only straight trees), by shifting harvest areas to allow for regrowth, by mangrove planting and by only using traditional hand tools such as "soli", " " and " ", not power saws, which

¹⁵ Spalding, Mark. World Atlas of Mangroves, 2010

¹⁶ Ministry of Environment, Natural Resources and Regional Development Authorities (2007). *National Mangrove Ecosystem Management Plan* 2017 – 2027.

¹⁷Lamu District Development Plan, 2008-2012, pg. 39

increases the rate of harvesting and places damage on the undergrowth.

During colonial times, mangroves were divided into zones, which helped to conserve them by limiting their harvest to particular zones and allowing other zones to grow and mature. We wish for this to be reintroduced. We also wish to enforce laws to stop the cutting of indigenous trees such as , and . Instead, there should be places where fast-growing timber sources such as casuarina trees can be harvested, that will not have negative consequences on the environment.

We also understand that the cooling system from Amu power coal plant will endanger our mangrove forests as they will be subjected to the thermal effluent (heated wastewater). We are aggrieved that our coastal ecology will be tremendously affected and we will lose our natural resources, which we use for our livelihoods.

The increase in population from the building of the port and other infrastructure will result ingreat destruction of our natural resources like mangroves, which are used for building houses and this too will impact the marine environment like fish breeding grounds and protecting the coast against natural flooding. Terrestrial forests too will be under duress from the increase in population and the other LAPSSET components and coal-powered plant that need large tracts of land for development. We fear that our resources will be depleted and we will lose our livelihood and heritage.

6.3 LIVESTOCK KEEPERS

We, livestock keepers, have traditionally come from the Orma, Bajun and Swahili communities¹⁸ though there are Somali and Korre within Lamu County who also rely on livestock keeping for their livelihoods.

As livestock keepers, we rely heavily on traditionally shared lands to graze our animals. We tend to animals like cows, goats, sheep and chicken. These animals provide us with meat, hides, bones, eggs and milk for eating and drinking and for selling. We also use our animals for religious and cultural ceremonies.

Our local breed of cattle is called "Boran" and we also have the "Somali" breed 19. The women in our communities travel to places like Lamu Town within Lamu County to sell our milk and other milk

¹⁸Livestock keeping provides livelihoods for about 30% of the population. See Office of the Prime Minister, Ministry of State for Planning, National Development and Vision 2030, 13.

¹⁹The cows are given particular names based on their behaviour and colour. These names include: Sorka, Bulle, Shiera, Haigi, Dima, Uruba, Hadi, Arabi, Jeleta, Sarba, Kareta, Churo, Waldei and Sahal.

products like soured milk), and to the community. We also use leather in the form of hides – sometimes to make accessories like shoes and belts or straps for our milk gourds and we use hides to make traditional mats for our homes. We use dung for fertilizer and mosquito repellent. Horns are made into musical instruments and are symbols of our lineages. We use traditional methods to take care of our animals, for instance, we use seawater for de-worming as well as for transport. We have cultural celebrations and traditional songs based on our livestock.

While the Bajun and Swahili slaughter cows for their meat occasionally, we the Orma only slaughter our cows on specific religious or cultural occasions, like during the month of . We also slaughter when we are faced with serious disasters. The Orma ceremonies for weddings and births involve rituals that connect us to our cows. For instance, before a female marries, four cows are chosen for the marriage ceremony. The bride anoints the chosen cows with her hair oil, and then the cows are slaughtered before the community's elders. This is known as and the ritual finalizes her marriage. We also have particular rites for the birth of a child. The umbilical cord of the newborn is kept and after seven days it is placed on a cow. When this cow has a calf, the calf is given to the newborn. This, we . These examples illustrate how important our cows are to the healthy functioning of our community.

We,the Orma, traditionally conserve our natural resources, such as lands, by shifting our animals when the grasses are low, so as to allow time for regeneration. We move our livestock seasonally and travel as far as Voi, in Taita Taveta County to graze our animals. During droughts, we have access to a place known as Boko, where the water table is close to the surface. There, we dig shallow wells using wooden tools. The well is called El-Boko or the well of Boko. We are prohibited from using iron tools to dig because it is believed that the metal will cause the well to dry fast. Our concern is that we will lose access to Boko because of land grabbing and this will affect our ability to sustain our community during drought.

We have a number of concerns as livestock keepers; The massive land grabbing that is taking place in the region means that the lands we have traditionally utilized to graze our animals are becoming less accessible. Our traditional grazing lands are being lost to small-scale and corporate farmers, sprawling private ranches and sugar cane production. We of the Orma community believe that the Tana Delta is our most important resource for our livelihoods, culture and traditional ways of life. We regard the Delta as our umbilical cord and need constant access to it in order for our cattle (and our families) to survive. We also play a role in the conservation of the delta by respecting its rhythms of flooding and drying, by integrating our cattle with the wildlife in the area including birds, fish, hippo and other wildlife, by not interfering with the natural delta patterns like disturbing

its banks, fencing or farming near its flood waters. This is not respected by newcomers.

Ranches have been established, but sometimes these are not managed well. Squatters are invading these ranches and felling trees, putting up fences and disturbing the natural ecology.

We hope to establish our own ranches, or at least have sizeable grazing areas available that will protect our interests. We also want communal title over our lands and support from the government for local infrastructure (such as roads), health services and security.

The LAPSSET and coal projects will result in large population growth with needs for water and electricity. We hear that the Government of Kenya plans to place a dam for water and hydropower on the Tana River upstream from where we live and raise our cattle. We fear that construction of dams along the river will negatively affect the delta, drying up its seasonal waters, destroying the habitat of wildlife as well as our resource on which we are dependent. We have not been consulted about this large infrastructure project and this makes us very anxious and fearful.

6.4 HUNTER – GATHERERS

We, hunter-gatherers, use natural resources within our traditionally owned and utilized forests, including animals, in order to survive. We are traditionally of the Aweer (Boni) and Sanye ethnicity and we divide our shared traditionally owned lands into three types - sacred sites that are used for special occasions and meetings and are otherwise untouched; areas where we harvest natural resources like herbs for traditional medicines, and; areas that where we gather honey and hunt for food. Specific clans use specific areas to hunt and there is a system of worshipping at the sacred sites of other clans if you hunt on their land. We, Aweer people, have traditionally lived in the Boni forest which lies within the Boni and Dodori National Reserves and have been mobile communities - communities that have survived by moving to different parts of our forests. We categorize our natural resources into 3 areas: the ocean, the forest and the lands for cultivating. Each of these areas has specific uses for the survival of our community.

We use grass thatch for building huts, fronds for weaving, wood for timber to construct our buildings and make combs and drums. We also use the forest for gathering herbs, natural medicines, wild fruits, tubers, "kama" (like dates), " " (like passion), " " (like potatoes) and other edible nuts and roots for food, and honey as well as gathering materials for making household goods such as walking sticks, mats, kitchenware etc. We traditionally harvest honey using the wood of a tree called " " which produces a smoke that makes the bees sleep as we harvest their honey resources. We have traditional knowledge of birds such as the

guide us to bees and honey. The Sanye also have a honey bird called ". We use the soil to make mud for our buildings.



Picture 10: Sanye woman weaving mat in front of her traditional hut

We eat, sell and trade our honey as with the fish that some of us catch. Traditionally, before the gazettement of our lands into National Reserves, we have also hunted animals for food such as small antelope, buffalo, and bushbuck with equipment such as the and (arrow) by the Sanye and the "," and by the Aweer.

We use water from wells, rivers, and lakes for our own consumption. Before the advent of table salt, we use to use salt harvested from salt beds to flavour and preserve our food. We sometimes have our own small farms to supplement our lifestyles. We plant sesame, millet, and cassava. We also live in harmony with farmers of other ethnicities, trading honey and other natural resources for food.

We have a spiritual connection with our lands – we believe the bones of (owl), are spiritual talismans and we revere them. We have several sacred sites and we maintain them because they are important to us, the way that we function and govern ourselves. For example, traditional worship for the Aweer previously occurred under the sacred tree, ', and 'um'. We pray at sacred trees for rains and for good health. These traditions continue and are incorporated into our belief in Islam. Men and women have separate sacred sites and neither is allowed to visit the others. The women's is known as and lie close to their villages, while the men's sacred site ' is found outside the villages.

We (the Sanye) consider the mongo tree as a special tree where we pray and make sacrifices when faced with disasters of any kind. We have already lost some of our ancestral burial grounds and we have a real worry that we will continue to lose more. We naturally conserve our resources and we are committed to looking after our resources so that we can preserve them for our children and their children. We follow cultural traditions and rules that allow the conservation of our resources such as: only cutting trees outside our forest, and only certain ones traditionally hunting only weak animals, not pregnant or young animals, so as to make sure that these resources regenerate, only harvesting honey seasonally and only traditionally by the use of smoke, not by fire, which causes more destruction than is needed, selecting fronds for weaving only from matured trees, keeping river zones for washing and drinking uses, and we protect sacred sites within the forest.

We are currently facing issues with our land. We find that our lands are given away to outsiders. Our traditionally owned and utilised land where we practiced shifting cultivation, has either been grabbed without our consultation, or being illegally logged without our knowledge or permission, or is used as part of the settlement schemes. We have been offered very little compensation (and only if we have trees on our land), even though these lands are vital to our cultural and spiritual survival. We are suffering as our lands and trees are taken away from us. We no longer have access to some of our sacred sites. Some of us (the Sanye) are now involved in subsistence farming, of crops like maize, banana, cassava, and mango as an alternative livelihood, in order to survive.

We are vulnerable when we speak of development projects because we (the Sanye) lack any political representation in the county, let alone nationally. We of the Aweer community have one elected representative in the County Assembly, but this is not enough to protect our vulnerability against developers who take our lands away from us. Generally speaking, we have very little formal education. Many of us have not completed primary education and we struggle to send our children to schools. Because of our literacy levels, business people, developers and government officers take advantage of us. We, the Sanye have not one title deed among all our community members. And we, the Aweer, are also facing problems with land security.

We fear that with the increasingnumbers of newcomers moving to Lamu to look for jobs, we will be forced to move to make room for them. Our traditional way of life will forever disappear as we move to towns and villages seeking shelter. We will lose our way of life and the natural resources that we use for our livelihood will be lost forever.

6.5 FARMERS

We, the farmers of Lamu County, are traditionally of Bajuni, and Swahili, though the Aweer, Sanye, and Orma are also involved in farming, often to supplement our traditional livelihoods. We have traditionally farmed crops such banana (), tobacco (, maize (, millet (), beans, sesame (simsim), sorghum (, cow peas, cassava, Other crops have included green grams, coconut, mangoes, cotton, cashews, limes, andbixa. Our farming supports a large part of the Lamu population.

As farmers, we use natural resources such as the soil, water and traditional fertilisers (and some of us use synthetic fertilizer). We use tools such as "jembe", " ", " ", panga and " " to farm. We use the crops that we farm to eat, to sell and sometimes for medicinal purposes (like the coconut). is also used to create fire for slash and burning. We, farmers, sometimes have problems when wildlife comes on to our farms and destroys our crops (as some of our farms border forests).

Farming is not simply our livelihood – we have cultural and spiritual traditions that are integrated into our farming practices. We, the Bajun, have traditional songs that we sing during the preparation of the ground for planting and for harvesting. We have someone who leads the farming who is selected amongst ourselves because of their knowledge, experience, and responsibility. We are given advice on where best to farm, including soil fertility, by a traditional astrologer, otherwise termed as ', in a tradition called "

A ritual " offering is also made to prepare for farming, with the deciding the best type of goat and time and day for the offering (called the " "). Other community rituals to prepare the land for farming include the "Kusonga" and a reciting of the Holy Quran (Chapter Yasin) and prayers to encourage success, as well as offerings to God in recognition of the blessings of a good harvest (called the ")."

We traditionally conserve and sustainably use our natural resources by shifting cultivation of our farms, to make sure that the nutrients in the soil are replenished. We are also involved in perennial, seasonal and settled cultivation of crops. We often farm as a group and when clearing bush for farm use, we selectively cut trees – for example, we do not clear trees such as "," or "," and " as these trees provide shelter. We also clear forests by burning, but this is done systematically by clearing the boundary of the farm before initiating a fire. When starting a fire we take into consideration the direction of the wind and create firebreaks. There are also many people that assist in this process, to help control the fire. Burnt pieces of wood are sold as charcoal.

We have two types of wind: and . is the wind that blows from south to north during the rainy season, and is the wind that blows from north to south. Before the colonial period, our farms produced enough food to feed the County, but since the insecurity of the 1960s, many of us have left our villages seeking security in other areas. Now we are dependent on food sources from outside the county. Also, political elites and outsiders have taken much of our farmland away from us. This has made us feel insecure and increased our poverty. Those of us who have lost their farmland have turned to fishing to eke out a living.

As farmers, we are vulnerable because most of us do not have documentation to show ownership of our land. We are also concerned because we are not allowed to enter the forest to retrieve the wild fruits that grow their like

The Lamu Port and other LAPSSET infrastructure are a great concern to us. We are concerned that our traditional farming lands will be grabbed, that our natural resources will be decimated by the number of people living in the county and that our traditional conservation methods will not be respected.

We also have problems of drug abuse among our youth populations. This problem may be caused by the anxiety of the future and what it holds for them. We fear that the problem will escalate as resources become scarce and more outsiders arrive looking for jobs.

6. 6 ARTISANS, DHOW MAKERS AND OTHER NATURE BASED LIVELIHOODS

Many members of our community in Lamu County gain a livelihood through using their creativity, their connections with their spiritual ancestors or their traditional knowledge. We are the Swahili, Bajun, Orma and Aweer communities, and we use our natural resources to make our shelters, construct our homes and other buildings. We cut stone (dead coral) from the ground for building blocks to construct our homes, mosques and old tombs and we use mud for constructing walls and mangrove poles for the structural elements of the building, for building special ovens, known as , for our traditional bread we call , and a special pot known as used to make traditional crepe only found on Pate Island known as

We use our hardwood to make fine furniture, the famous Lamu doors, and sailing dhows. We use clay soils to make pots, which traditionally held such things as water and vinegar made from the sap of the coconut tree. We use the materials of the coconut tree for many purposes including making rope, palm fronds for thatching roofs, for stuffing mattresses, medicines for bladder ailments, for cooking fuel,

for seedling wrappers, making sieves and baskets and for food. We also use reeds for making mats and baskets.

Our natural resources are also a mode of transport for us. The sea channels provide protective highways between the islands. We use the stars to travel on the sea. These resources are also a magnet for tourism. We have visitors who come to Lamu to experience traditional Swahili culture and admire our fine craftsmanship of furniture making and our traditional Lamu doors. They also come to experience our beaches, swim in our pristine waters and sail on our traditional dhows. We also weave mats, baskets and make handicrafts to sell. What we create is a source of pride for us, as it is through the skills of our ancestors and our ingenuity that helps us to create.

We naturally conserve and we are committed to continually looking after our natural resources. We follow these cultural traditions and rules: We only harvest matured trees; we protect and feed our animals well; we use natural stones for building; we plant trees; we use alternative livelihoods, for example, beekeeping; we protect our water sources and conserve water catchment areas; we build communal rainwater catchments and we preserve the _____, the branches of the coconut tree by not cutting fronds, protecting its growth.

With the influx of the population with people seeking land in Lamu County, our natural resources are threatened. Areas that we have always utilized are being encroached upon and fences are built to keep us out. Also, the land is coming under cultivation of cash crops, which destroy the natural ecology and uproot the resources that we have used from time immemorial. Illegal logging is also a threat to our wellbeing. Loggers are using modern equipment to fell trees and disregarding selective cutting. They cut all in their path. Our rights to land have not been recognised and thus we are insecure and fear for our survival.

Through our ancestors and cultural traditions, we have learned how to live on our lands and waters sustainably, so that we can make sure that these resources are available for our neighbours and for our children. We acknowledge and are committed to following these conservation rules so that we can continue to live in harmony with our environment. We are committed to teaching our children our ways and methods of conservation so that these traditions that are important to our culture are passed down through the generations and protect the environment that is important for our survival.

We have our own personal commitments to conservation – but this will be difficult to follow if we have no information about the various development projects that come our way, including LAPSSET, Coal plant and how they will affect our communities and livelihoods.



Picture 11: An artisan making fishing nets in Siu

7.0 EXISTING DECISION MAKING STRUCTURES

All the indigenous peoples in Lamu are Muslims and Islamic law underpins the decisions regarding inheritance, marriage, and divorce, which is overseen by the Kadhi system that is recognized by the Kenyan Constitution. In some communities, traditional pre-Islamic values remain strongly intact and Islamic law is less potent. This can be seen in practice of traditions that waver from Islamic Sharia law among different groups. For instance, among the Orma, males are sole inheritors and among the many Bajun and Swahili, the male typically inherits dhows and farms while females inherit houses.

Among the indigenous peoples of Lamu, traditionally a council of elders made decisions. In each town or area, a council of elders made the decisions concerning the welfare of the community, including land usage, security, and trade. They also governed civil cases amongst neighbours and oversaw annual religious rituals some of which are connected with economic activities like farming, livestock, and fishing.

Among the Swahili and Bajun, the Council of Elders is very similar. At the head of the decision-making system is the " or " or " i" meaning the village elder or owner of the village. His council is made up of neighbourhood or location elders called "

" or " ... These elders also represent the various livelihood groups in the area like farmers, fisherfolk, artisans, and traders. The council has authority in the area and is given respect by the inhabitants. Bujun and Swahili women have their own council called " and they have the right to make application to the council in community matters.

The Sanye have a slightly different system, however. The council is three-tiered with the council leader at the top of the structure known as

Annex FR13 $\label{thm:eq:continuous} \mbox{Kimakwa E and Barabara M S,} \mbox{A review of lobster fishery management in Kenya: a case study}$ on the development of the rights—based fisheries management system (co-management), 2019

Annex FR13

A review of lobster fishery management in Kenya: a case study on the development of the rights—based fisheries management system (co-management)

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Abstract

This review uses the lobster fishery in Kenya as a case study for the development of a rights-based fisheries management system. It discusses the fishery's characteristics, production trends, management systems, socio-economic dynamics, input and output controls, and challenges and opportunities. The paper highlights the achievements of co-management and recommends measures necessary to achieve effective management of the fishery. The lobster fishery is one of the most important resources in Kenya. The fishery is based on five spiny lobster species: Panulirusornatus (ornate spiny lobster), P. longipes (longlegged spiny lobster), P. penicillatus (pronghorn spiny lobster), P. versicolor (painted spiny lobster), P. homarus (scalloped spiny lobster). Small-scale fishers harvest lobsters along the entire Kenyan coastline. Average annual landing in 2009-2013 was estimated at 84 metric tons (mt). In 2016, 389 mt was landed. Fishers employ different gears to catch lobsters. Communities have practised lobster fishing for centuries under traditional systems of lobster fishery management. Collaborative fisheries management was introduced in 2006 with the establishment of Beach Management Units (BMUs). BMUs have legitimate jurisdiction over their fisheries, access, user and management rights. The management of the fishery is by limitation on fishing gears, sizes (weight) landed, protection of breeding stock, and authorized entry. Market-based tools (Marine Stewardship Council certification) and spatial management (co-management areas) are being pursued. Harvest control rules and strategy have been proposed in the draft lobster management plan. A well-defined use, access, management and ownership rights system that is complemented by biological controls and technological interventions can help drive the fishery to sustainability, and improve socio-economic returns.

Keywords: Lobster, management, rights-based, Coast, Kenya

1. INTRODUCTION

1.1 Description of the fishery

Kenya has a coastline of over 640 kilometres (km) and 880 km including inlets and bays (Ministry of Agriculture, Livestock and Fisheries, 2016), extending from Somalia to the North and Tanzania to the South. The country has an expansive Exclusive Economic Zone (EEZ) of 200 nautical miles. Kenya has vast and diverse coastal and marine ecosystems, including estuarine, seagrass beds, coral reefs, nearshore and offshore waters. These ecosystems provide important habitats, breeding and feeding grounds for marine life, including fisheries resources (Government of Kenya, 2017).

Fishing is one of the most important economic activities for local communities on the Kenyan coast. Fisheries are important sources of local income, food and nutritional security. The lobster fishery is one of the most important crustacean fisheries resources in Kenya. The fishery is multi-species with harvesting activities confined within the coastal areas less than 3 nautical miles from shore. The spiny lobster is the most valuable one, although the lobster fishery in Kenya is based on five shallow water spiny lobster species, namely, *Panulirus ornatus*, *P. longipes*, *P. penicillatus*, *P. versicolor*, *P. homarus* (Mueni et al.,

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2016). Over 75 percent of the lobster landings in Kenya is comprised of two species, *P. ornatus and P. longipes. P. homarus* is also abundant, especially on the North Coast. Other spiny lobsters include *P. versicolor, P. penicillatus*, though their catches are extremely low.

Lamu Archipelago, Kipini-Kiwaiyu Islands, and the Mambrui, Kilifi, Msambweni and Shimoni areas are highly productive lobster fishing grounds. Lamu-Manda-Pate Archipelago accounts for about 50 percent of all the lobster landings in Kenya (Mutagyera, 1978; Church & Obura, 2003). These high catches are attributed to the wide continental shelf with a large cover of shallow reefs. The harvesting of lobster is done throughout the year, and peak season is reported in the months of November to March. This coincides with the North-East Monsoon (NEM) winds (McClanahan, 1998).

Fishing for lobster in Kenya by the coastal communities has been a practice for centuries, with commercial exploitation reported only in the 1950s. The growth of the tourism industry in Kenya and the demand for lobster on the international market have been the key drivers behind the commercial exploitation of the lobster fishery. Lobster is one of the most pricey and highly valued seafood products, both on the domestic and export markets (Olendo & Weru, 2009). The catches for lobster, including the size, are declining. This can be attributed to increasing fishing efforts and changing environment and recruitment cycles (Church & Obura, 2003). The use of illegal fishing gears such as Beach seine ("juya") is also on the increase, consequently contributing to increased fishing pressure.

The number of artisanal fishers, including those targeting lobster, has gradually increased over the years. There are 13 426 artisanal fishers at the Kenyan coast, of which 98 percent are male, and only 2 percent are female (Ministry of Agriculture, Livestock and Fisheries, 2016). The Marine Frame Survey Report (2014) gives an estimate of 690 lobster fishers along the Kenyan Coastline. Lamu County has the highest number of lobster fishers with 511, which represents 74 percent of the total. Other counties are Kilifi (119, 17%), Kwale (29, 4%), Tana River (24, 4%) and Mombasa (7, 1%).

Most of the fishers are from the local coastal communities, and they have a right to access the fishery by paying for a fishing permit. This is obtained at the Kenya Fisheries Service for a modest fee. Individuals, owners of fishing boats, family members of fisherfolk, fish processors and/or fish buyers - as well as local fishing communities once granted permit - carry legally recognized rights to access the lobster fishery without any prejudice. There are 197 fish landing sites at the coast, of which 175 are served by the Kenya Fisheries Staff (Ministry of Agriculture, Livestock and Fisheries, 2016). Lobster fishers land their catch at designated landing sites in their respective Beach Management Units (BMU) sites.

Conflicts over fishing grounds by different players in the same space usually arise. Sometimes, artisanal fishers complain of their fishing gears being destroyed by semi-industrial (prawn trawlers) and deep-water fishers. Conservationists accuse fishers and tourists (that snorkel) of breaking and destroying coral reefs. Artisanal fishers, on the other hand, usually come into conflict with the marine park management authorities for illegal fishing in marine protected areas. Large-scale infrastructural development, such as the Lamu Port, is also a source of conflict. Recently, artisanal fishers sued the government of Kenya over compensation for the loss of their fishing grounds, which occurred due to the construction of the Lamu Port (Kenya Business Daily, 2 May 2018). Oils spills have also been reported, causing the death of mangroves and the degradation of fishing grounds.

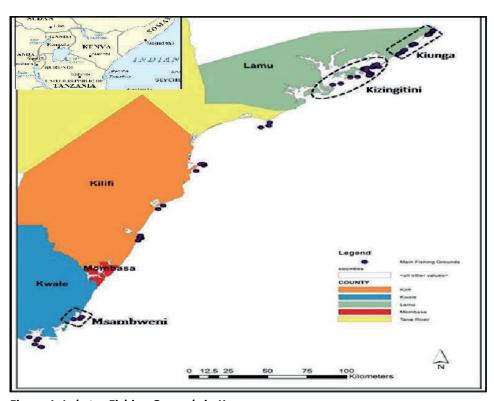


Figure 1. Lobster Fishing Grounds in Kenya.

Source: https://www.un.org/Depts/Cartographic/english/htmain.htm, Mueni et al., 2014. Stock assessment of Kenya commercial spiny lobster species (Panulirus spp., Palinuridae) Kenya. Technical Report NEPAD Project 2014.

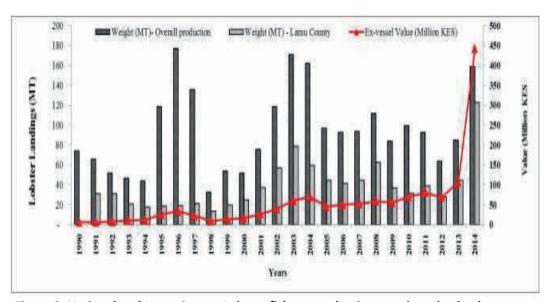


Figure 2. National and Lamu County Lobster fishery production trends and value between 1990 and 2014.

Source: Mueni et al., 2016.

1.2 Economic contribution and social implications of the fishing activity

The lobster fishery is an important source of livelihood and income for the local fishing communities, as well as a source of revenue and foreign exchange to the country. There are approximately 639 individual lobster fishers, all of whom are men (Frame Survey Report, 2014). Lobster fishing, on average, contributes to 26-50 percent of the fisher's total income. Lobster fishing is seasonal - depending on the monsoon season - with peak season ranging from November to March. During the low season, fishers engage themselves other non-fishing livelihoods such as transport, tourism, farming, forestry, and fishery-related services such as boat and net repairs.

Lobster fishery products in Kenya are sold as whole, live animals or frozen to domestic and export markets. Lobster catches are mainly sold through dealers who then transport to local hotels or the export market. The domestic market is becoming increasingly popular. Lobster is on the menu of high-end hotels in Nairobi and Mombasa, namely the Tamarind Group, Nyali Beach Hotel, and Hotel White Sands. The demand for lobster is high during the high tourist season. The average price offered by the hotels to the suppliers is 1 200 Kenyan shilling (Ksh.) per kilogram (kg) of lobster.

Most lobster from Kenya to the export market is in frozen form, though many dealers and processors are also involved in the export of live lobsters. There is a general decline in the amount of lobster exported, in particular, frozen lobster. The European Union is the main export market with 97 percent, with Italy, in particular, importing a lot. Ninty-five percent of the live lobsters are exported to China. There are three lobster processing and exporting companies in Kenya, all of which are based in Mombasa. Crustacean Processors is the leading exporter, accounting for 73 percent of the exports. The other two companies are Trans Africa and Sea Harvest.

The lobster price per kg varies depending on the size, season and the prevailing fluctuations in supply and demand. In some cases, the trader, who has financed the fishing operations, determines the price. In this situation, the traders are assured of a steady supply of lobster at a determined price. Prices for lobster are usually high during the low fishing and high tourist seasons. The price ranges from Ksh 500 to Ksh 1 500 per kg. Lobster exports increased from 38 mt valued at Ksh 33 Million in 2001. In 2004, some 208 Mt of lobster valued at Ksh 141 Million was exported. In 2016, an estimated 79 mt of lobster valued at Ksh 78 Million was exported (Ministry of Agriculture, Livestock and Fisheries, 2016).

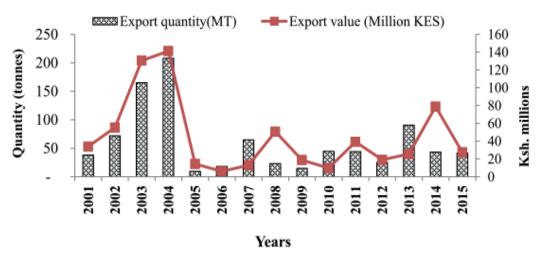


Figure 3. Trends in Lobster Exports 2001-2015. *Source:* Kenya Fisheries Annual Statistical Bulletin, 2016.

2. MANAGEMENT OF THE FISHERY AND RIGHTS-BASED APPROACH

2.1 Management of the fishery

The management of fisheries resources in Kenya is under the jurisdiction of the Kenya Fisheries Service (KeFS), as provided for in the Fisheries Management and Development Act 2016. The Kenya Marine and Fisheries Research Institute (KMFRI) established under the Science and Technology Act (CAP 250) has the mandate for fisheries research. In the marine reserves, including the Kiunga National Marine Reserve (KMNR), fishing is regulated by the Kenya Wildlife Services (KWS) in close collaboration with the Kenya Fisheries Service and the County Governments. The Kenya Wildlife Conservation and Management Act (2013) prohibits any form of fishing in the Marine Protected Areas (MPAs) while allowing controlled fishing in marine reserves with the active involvement of the local communities. The County Governments, the local fishing communities, Beach Management Units (BMUs), the industry, the Civil Society Organizations (CSOs), Universities and Non-Governmental Organizations (NGOs) are also involved in the formulation of rules and implementation of fisheries management measures.

The Fisheries Management and Development Act 2016 makes provisions for fisheries management measures, including prohibitions on the catching of berried females, fishing gear restrictions (use of beach seines, speargun, scuba gear), and minimum size and maturity restrictions (e.g. landing of lobster of less than 250 grams (gm) is outlawed). Trawling activities are restricted in the five nautical miles and beyond; this may as well apply to lobster fishing. The role and active involvement of local communities in the management of fisheries resources, including lobster, is provided for in the Act. Compliance is achieved voluntarily through the implementation of BMU internal rules (by-laws).

This is part of the co-management strategy, though its implementation is faced with a number of challenges, including inadequate enforcement mechanisms. Currently, there are over 80 BMUs established in the Coast Region. Fifteen co-management areas (CMAs) have been established, though at varying stages. Three joint co-management areas have been set up, too, namely the Pate Island in Lamu County, the Malindi–Ungwana Bay (covering part of Kilifi Tana-River and Lamu Counties) and the Shimoni-Vanga in Kwale County. The Kenya Fisheries Service licenses access to the fisheries resources. The BMUs and County Government are responsible for vetting those applying for a fishing license. Fishing without a license is illegal, and anyone found infringing on these provisions is reprimanded and charged in a court of law.

The Kenya Fisheries Service, in partnership with other key stakeholders, the industry and the local fishing communities, has developed a comprehensive lobster fishery management plan. The plan which is yet to be gazetted provides for the introduction of closed areas/seasons, harvest control rules and strategy, limiting of fishing effort through licensing of lobster fishers, and setting of Total Allowable Catch (TAC) and size restrictions (Caparace length (CL)). This is in addition to weight restrictions that are to be adjusted upwards from 250 to 300 grams. The Lobster management plan provides for prohibition of retention and landing of lobsters of the minimum carapace (MCL) of 70 millimetres (mm) CL for *P. ornatus*; 65 mm CL for *P. versicolor*, *P. homarus* and *P. penicilatus*; and 60 mm for *P. longipes*.

The Kenya Fisheries Service, in partnership with other agencies including KWS, county governments and local fishing communities, is responsible for the enforcement and monitoring of lobster fishing activities. However, there is limited capacity, especially on the part of the BMUs. As part of the Monitoring and enforcement of the fisheries law, a vessel has to be cleared by a relevant national entity before it is licensed for any fishing operations. There are also surveillance and patrol vessels, while the relevant government staff and BMUs undertake land-based beach patrols. The Kenya Navy and the recently created Kenya Coast Guard Service have pushed a notch higher towards enforcement of the fisheries law.

There is catch monitoring at the different landing sites, although some fishers have been reported to avoid the designated landing sites in order to perpetrate illegal activities elsewhere. Post landing monitoring focuses on market and sales, exports, and roadblocks on transport/ transit routes.

Failure to comply with the relevant provisions for lobster fishing usually result in the arrest of the offender, who is charged in a court of law. The fishing vessel and/or equipment are confiscated, criminal charges are preferred, and the offender is required to pay a fine and or serve a prison sentence. Resource use conflicts usually arise from time to time. This is because there are competing interests over the use of the same space by different maritime sector players. There are various conflict resolution mechanisms in place whenever they arise, namely the legal redress in a court of law, as well as local administration (Chiefs, Sub-chiefs and village elders) and the Beach Management Units (BMUs). Lead government agencies in the different sector including fisheries officers, park management authorities and the county governments would always intervene, whenever there is a conflict between the different players in the lobster fishing grounds. To some extent, these mechanisms have been moderately effective but more needs to be done to strengthen them. More powers, for instance, should be given to the BMU leadership to reprimand offenders and be actively involved in the prosecution. Customary mechanisms seem to work very well, and they need to be embraced and strengthened in order to complement the court and judicial process.

3. CONTRIBUTION OF THE RIGHTS-BASED APPROACH TO ACHIEVING SUSTAINABILITY

3.1 Sustainable use of the resources

Kenya is endowed with rich marine resources, including fisheries. Previous studies have estimated that the potential Kenya marine fisheries resources are in the range of 150 000 – 300 000 mt per year. There is limited knowledge about the status of stocks in Kenya marine waters, including lobster fisheries. The KeFS with the support of WWF and collaboration from other partners, including KMFRI, developed and initiated the lobster fishery improvement project (FIPs) as part of the Marine Stewardship Council (MSC) standards certification. The implementation of the lobster FIP, which has been ongoing since 2012, has seen the fishery moving towards sustainability. In June 2018, the application of the Marine Stewardship Council (MSC) Benchmarking and Tracking (BMT) tool gave a score of 0.89 out of the possible 1. This is a remarkable improvement to the fishery, compared to its 0.54 index in 2014. Plans are underway to subject the lobster fishery to full assessment.

The lobster stock assessment was undertaken in 2016 by KMFRI in collaboration with KeFS, WWF, Pwani University and other partners. The assessment was supported by the Kenya Coast Development Project (KCDP) with funding from the World Bank. The results from the current stock assessment indicate that the Kenya lobster fishery is not overexploited as previously thought (Mueni et al., 2016). In Lamu, for instance, *P. ornatus* was the most abundant species contributing 55% of the catch sampled. This was closely followed by P.longipes, which accounted for 26% of the catch composition. *P. homarus* contributed 13%, while *P. vesicolor* and *P. pencillatus* contributed 4% and 2% respectively. *P. ornatus and P. longipes* combined accounted for over 81% of the lobsters catches.

The legal size for the lobster to be landed is 250 gm and above. The study revealed that based on length at first capture and length at first maturity, most of the species attain maturity at sizes above the Minimum Legal Weight (MLW) of 250 gm. This implies that juveniles of *P. ornatus*, *P. penicillatus* and *P. homarus* are still being captured with the exception of *P. longipes*, which matures below the MLW. Further study is yet required.

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The information and data generated by the lobster FIP and stock assessment have been used to inform the development of the lobster fishery management plan. The plan proposes the management of the lobster fishery based on limiting fishing effort by licensing fishers, introduces closed season, 'no-take zones' as well as total allowable catch (TAC). The plan though, is not yet gazetted. The co-management areas have been established, at Pate Island (Lamu), Malindi-Ungwana Bay (Kilifi –Tana River) and the Shimoni-Vanga (Kwale). There are several co-management areas managed by the Beach Management Units (BMUs) where the no-take zones have been established. The zones are important breeding and foraging grounds for different marine life, including the lobster fishery.

3.2 Economic viability of the fishery

The number of artisanal fishers, including those targeting lobster, has gradually increased over the years. There are 13 426 artisanal fishers on the Kenyan coast (Ministry of Agriculture, Livestock and Fisheries, 2016). The Marine Frame Survey Report (2014) gives an estimate of 690 lobster fishers along the Kenyan Coastline. The lobster fishery is experiencing declining catches. Fishers targeting lobster must now venture further offshore. Hence the distance travelled has increased to reach fishing grounds. The duration for an average fishing trip for lobster has also increased. This has driven upward the cost of lobster over time.

The introduction of co-management in the artisanal fishery has resulted in changes in the type of gears used in the lobster fishery. The use of the speargun was outlawed, and the number of fishers using this gear illegally has reduced. The use of gillnets to catch lobster is on the increase, too. More fishers are now using vessels with outboard engines, however, the average length and gross tonnage of the fishing crafts have remained unchanged. Lobster fishers do not use Fish Aggregating Devices (FADs) in their fishing operations.

Vessels are owned by individuals who sometimes lease out to fishers. In many cases, artisanal fishing is a mutual partnership that brings together the owner of the boat, owner of fishing gear and the fishing crew. The proceeds from the fishing operations are shared based on the agreed proportions amongst these three individuals/ categories of the partnership after every fishing trip.

3.3 Social equality

Fishing rights are owned by individuals who have access by paying a fishing permit. The fishing permit is issued by the Kenya Fisheries Service to the individual fisher. The cost of the permit is Ksh 200 (equivalent to USD 2) per annum; once purchased, it is not transferable. Over the years, there haven't been changed in the legal requirements and cost of the fishing permit. However, the lobster fisheries management plan (once gazetted) will oversee the introduction of fishing permits specifically for fishers targeting lobster. The allocation of fishing rights for lobster and other artisanal marine fisheries via permit takes into consideration the ability of the poor and vulnerable communities to access their basic livelihoods needs, in particular food and nutritional security. The economic viability of the fishery, stock sustainability and the rights of the local communities are also important criteria for distributing fishing opportunities in the artisanal fishery.

In the event of an emergency such as a hazardous event, it is not possible to identify individual lobster fishers in order to deliver targeted support or reallocate fishing rights. As earlier mentioned in the previous section, there are no fishery-specific fishing permits.

4. MAIN CHALLENGES AND WAY FORWARD

4.1 Challenges for the fishery

The lobster fishery in Kenya is faced with a number of challenges and constraints relating to governance, production, processing and marketing:

- Many of the lobster fishers do not have their own fishing equipment and capital to venture into
 lobster fishing. Some of the dealers and fish processing plants provide credit, nets and fishing
 gears to lobster fishers through their agents. Therefore, they play a big role in determining the
 prices at the landing sites and collections points. This erodes the power of the individual lobster
 fishers to negotiate for their fair share, whilst also constraining their growth in the subsector.
- Most of the fish processors and lobster dealers complain of high transport and freight charges.
 Subsequently, this requires higher amounts of working capital. This has resulted in a shift where some lobster processing and exporting companies are now targeting the domestic market. They supply their products to hotels when supplies are low.
- The results of the Frame Survey Report (2008) show that there were some 12 077 marine artisanal fishers in 2008, up from 7 500 in 1990. The Frame Survey Report (2016) shows the number of artisanal fishers increased to over 13 000. Olendo and Weru (2009) reported that there were over 5 000 fishermen in Lamu, with approximately 50 percent of them fishing in the Kiunga Marine National Reserve. Consequently, this has put undue pressure on the lobster stock, which is now on the decline. The lobster fishers have to invest more in terms of fishing efforts and have to fish in more distant places, compared to previous years.
- Shrimp trawlers catch significant amounts of lobster as by-catch. The exact quantities of the
 lobster caught are not known due to non-submission of catch data by these vessels. The volume
 and value of the lobster supplied to the domestic market is not clearly defined. This is because
 there is no comprehensive data collection system targeting the local market, in particular, the
 hotels and restaurants.
- Artisanal fishers, as well as the key players in the domestic market, acknowledge that there is a
 great potential for marketing their catch to larger national and international markets. However,
 the high sanitary and phytosanitary (SPS) measures and strict standards imposed by the EU
 present challenges. There are also other marketing constraints, including inadequate cold storage
 facilities along the supply chain, poor road infrastructure, and seasonality of the lobster landings.
- The EU illegal, unregulated and unrecorded fishing (IUU) regulation came into effect on 1 January 2010 to prevent IUU products from being sold on the EU market. Compliance with the EU regulations has some cost implication to the government and to the fish processing and exporting establishments.
- The Kenya Fisheries Service (the then Fisheries Department), with the support of other partners
 including WWF, Cordio-East Africa, NEPAD, local fishing communities and the industry, initiated
 the process of formulating the lobster fishery management plan in 2009. The plan is yet to be
 gazetted by the Kenya Government.

4.2 Improving fishery sustainability in the future

The contribution of the lobster fishery to the national economy and livelihoods of the local fishing communities in Kenya must not be overemphasized. The challenges the fishery is facing, unless addressed, can drive the lobster stocks to depletion. This would eliminate socio-economic benefits to the country and the people that depend on lobster fishery for their livelihood.

In this paper, we propose a number of technical solutions, management measures and market-based approaches that would help improve the governance of the lobster fishery and move it towards sustainability. This would ensure long-term sustainable use of the lobster fishery, its economic viability and social equitability. We make the following recommendations:

- Strengthen enforcement and surveillance of the fishing operations to ensure compliance with
 policy and legal provisions for lobster harvesting. This would greatly reduce, among other things,
 the use of illegal fishing gears, unlicensed access to the fishery and landing of undersized
 individuals.
- Local communities play an important role in natural resources management. Efforts should be directed towards capacity-building in local fishing communities in participatory monitoring, management and development of the lobster fishery.
- Data on fish stocks is helpful to inform decision making and management of the fishery. The data
 and information on the biology of the lobster fishery in Kenya are limited. Further research on
 the lobster fishery in Kenya is desirable, in particular, the biological aspects including lobster
 migration and impacts of fishing operations on the ecosystem. In the event that data and
 information on the fishery are inadequate, a precautionary approach should be applied to help
 reduce the risks of the fishery from collapsing.
- Time and area closures have been reported elsewhere to contribute to sustainable use and management of the lobster, prawns, octopus and Sardine fisheries. These closures should be introduced by KeFS in consultations with the respective county governments, the private sector and local fishing communities.
- Currently, there are restrictions at the lobster fishery on the size of the lobster to be landed, prohibitions in the catching of berried females, and outlaws the use of beach seines, spear guns and scuba gear. Trawling is confined to the five nautical miles. Kenya Fisheries Service and the key stakeholders, including fishers, should, in addition to the weight restrictions, introduce carapace length restrictions. This will take into consideration mature individuals that weigh less than 250 gm.
- With the increasing demand for lobster on both the domestic and export markets, fishing pressure on the fishery will continue to increase. Efforts should be directed to introduce fishing effort control, total allowable catch (TAC) and a rights-based approach.
- Lobster is high-value seafood, and with increasing demand, dealers and fishers are likely to underreport and not record the sources of their lobsters. The government, the industry and fisherfolk should implement a transparent traceability system.

As these challenges persist, more consumers in the export market - particularly in Europe, USA and South Africa - are now demanding environmental credentials for the seafood products that access their markets. The local fishing communities, the Kenyan government, NGOs, development partners and the industry are implementing the lobster fishery improvement project (FIP) with the support of WWF and other partners. This is part of the lobster fishery certification and creates a market-based incentive to drive the fishery to sustainability, while at the same time ensuring market access and fair price of the products. The recent results of the Marine Stewardship Council (MSC) Benchmarking and Tracking Tool (BMT) has shown that the lobster fishery is moving towards sustainability with a BMT index of 89 percent (WWF, 2018).

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Natural resource dependence, livelihoods and development

Perceptions from Kiunga, Kenya

Melita A. Samoilys and Nyaga W. Kanyange





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Acronyms and Abbreviations

AIG Alternative Income Generating activities

BMU Beach Management Unit
CBO Community Based Organizations

CORDIO Coastal Oceans Research and Development in the Indian Ocean

Collaborative Management Area

CPUE Catch per Unit Effort

CMA

EARO IUCN Eastern African Regional Office

EAWLS East African Wildlife Society
EEZ Exclusive Economic Zone
FGD Focus Group Discussion

IUCN International Union for the Conservation of Nature

KES Kenya Shillings (currency)

KESCOM Kenya Sea Turtle Conservation Committee

KMNR Kiunga Marine National Reserve

KSV Kiwayu Safari Village KWS Kenya Wildlife Service

NALEP National Agriculture and Livestock Extension Programme

NGO Non-governmental Organisation
ORI Oceanographic Research Institute

USAID United States Agency for International Development

USD United States Dollar (currency)
WWF World Wide Fund for Nature

Executive Summary

Numerous marine resource management initiatives have been implemented in East Africa over the last 15 years. However, success has been limited if poverty and natural resource health are used as indicators, although the capacity to manage marine resources has improved. This study seeks to map coastal peoples' perceptions of marine resource use and their dependence on these resources, changes in resource status, and what effect conservation and natural resource management have had on coastal peoples' socio-economic development, in order to understand the bottlenecks to good governance of common pool marine resources. The Kiunga area in northern Kenya and the Tanga area in northern Tanzania were selected for case study analysis due to considerable conservation and management intervention in these areas over time. The findings of the Kiunga case study are presented herein.

The objectives of the study were to compile existing information on the link between coastal peoples' livelihoods and marine resource management in Kiunga, with a particular focus on fisheries; and to analyse past work on livelihood enhancement and associated capacity building, empowerment and participatory approaches to marine resource management. Special attention was paid to the semi-commercial invertebrate fisheries associated with this area, particularly lobster and crab, as well as shark, mollusc and sea cucumber fisheries. Attention was also paid to the level and extent of involvement of the local community in the management of their marine resources. Information was obtained through literature research; meetings with resource managers and government officials; and a combination of focus group discussions and key informant interviews in the villages in Kiunga Marine National Reserve (KMNR).

Management and conservation interventions by several institutions in KMNR have had a positive impact on the lives of the people living in the Kiunga area, primarily through providing health, education and transport services. However, the socio-economic status of the people has improved little. Also, development of the region does not appear to have changed significantly since the 1980s, especially in terms of infrastructure: the road is still a sand track, there is no public vehicle service and telecommunication north of Mkokoni village is non-existent.

With little development in the area the people living in KMNR are still highly dependent on fishing for their livelihoods - 95-100% dependency in terms of income was recorded in this study. However, fisher catch rates and earnings are declining as human population numbers increase and greater pressure is put on marine resources.

Co-management initiatives are a relatively recent introduction and are yet to reap tangible benefits in terms of improved fisheries management and improved livelihoods. The area sustains important and valuable fisheries such as the lobster and mangrove crab fisheries. With better management and effort reduction these fisheries could be sustainable and productive in the long term. This would ensure the fisheries bring an important source of income to the region as well as maintain a traditional form of livelihood. Considering the high levels of poverty and dependence on natural resources, alternative income-generating activities (AIG) now need to be vigorously pursued. The area has enormous wealth in terms of a very high aesthetic value due to minimal development and high biodiversity, and community based eco-tourism presents an opportunity. Mariculture development is also being explored.

However, a number of bottlenecks exist which, if addressed, would help create an enabling environment for livelihood enhancement and development. For example, this study found that the local communities in Kiunga Marine National Reserve view conservation efforts as somewhat separate to their primary livelihoods of fisheries and not directly benefiting them, except through side programmes such as education and health. More direct involvement and empowerment of communities is needed to address this, although ultimately it is tangible benefits stemming from conservation activities and accruing directly to communities that will ensure buy-in. An essential step in this process is the establishment of Beach Management Units that are anchored in the communities while enjoying the trust of the authorities, structured in such a way that they cover areas that are sufficiently large and reflective of traditional fishing practices in the area.

There is a risk of conservation successes already achieved becoming undone, further undermining resource management initiatives. Programmes in the area have created wide support for conservation of marine turtles, and local poaching has been significantly reduced, but mechanized, mainly foreign, fishing vessels illegally fishing near shore (within 12nm) are implicated in incidental turtle by-catch and mortality as well as habitat destruction. Communities identify this as one of the main drivers of resource degradation, and have repeatedly asked authorities and conservation agencies for assistance in tackling this problem, which is beyond their capacity to address. Intervention in the form of more coherent enforcement of regulations, more clear progress on natural resource management, as well as an increased focus on empowering and involving communities in these, are all urgently needed.

The unique natural and cultural characteristics of the area will remain its greatest opportunity for socioeconomic development in the foreseeable future. In order to make possible local development that benefits all people in the area without compromising resource sustainability, the area must become more closely connected to outside markets, for sale of products such as from fisheries or local manufacturing, for attracting tourists and development capital, and for providing opportunities to build capacity and increase livelihoods development and specialization. This could e.g. allow taking a cautious approach to development, targeting specific niche markets such as high-end, low impact tourism, or sustainably farmed seafood, but must be coupled with sound planning and management.

Lastly, continued commitment to improved education in the area and empowerment of people to participate in and indeed become drivers of conservation as well as development are fundamental to sustainable development in the long term.

6

1. Introduction

Sustainable use of biodiversity has significant links to human wellbeing and poverty reduction. More than 10 years after the 1992 Rio Declaration on Environment and Development, demographic trends, health epidemics and the pressing need to reduce poverty have strained natural resources and threatened to greatly diminish the world's collective biodiversity. These trends have serious implications not only for future poverty reduction and development, but also for the health and wellbeing of the human population today.

In Africa, millions of people depend heavily on the continent's genetic, species and eco-system diversity to support their livelihoods. This biodiversity contributes both directly and indirectly to human health and nutrition. The direct contribution of biodiversity is seen as an invaluable source of food through fisheries and through ecosystem services.

Some 30 million people live in the coastal region of the Western Indian Ocean, many highly dependent on its marine resources and having a significant impact on resource status. A majority of these coastal communities are categorised as living at or below national poverty lines. In Kenya poverty appears to be strongly linked with fishing communities, with the highest poverty prevalence in the country of 62-63% (2000 national statistics) in the Coast Province.

Over-fishing and destructive fishing techniques that cause habitat destruction, coupled with a rising population are of increasing concern in East Africa (Obura 2005, Weru 2007). These unsustainable practices are embedded in poverty and continue because poverty reduction strategies are failing in coastal communities in East Africa. Further, coastal communities remain disempowered in terms of having ownership over the marine resources they exploit, which remain common pool.

The link between improving the health of the marine environment and improving coastal people's livelihoods has not been quantified in East Africa (Samoilys and Church 2004), and national poverty alleviation strategies tend to neglect the importance of natural resources in peoples' livelihoods. However, it is clear that reduction of poverty through sustainable livelihood development, which in turn helps maintain biodiversity and improve conservation strategies (Ireland et al 2004, Harrison 2005), is a pressing theme that requires careful analysis, community consultation, and integration of cross-sectoral planning and management. The many marine resource management initiatives implemented in Kenya over the last 15 years have generated a considerable amount of information and know how as well as community institutions and infrastructure, but in spite of this success has been limited in terms of poverty alleviation and improved natural resource health (Kenya poverty statistics 2000, Obura 2005).

In this study we ask how dependent coastal communities are on marine resources, and what effect conservation and natural resource management has had on coastal peoples' socio-economic development, in order to understand the bottlenecks to good governance of common pool marine resources and poverty reduction in coastal communities. The study is also designed to identify locally appropriate mechanisms for enhancing and diversifying livelihoods for fishing communities. The Kiunga area in northern Kenya was chosen as a case study because of considerable conservation and management intervention in the area over time. A similar study has also been carried out in Tanga, Tanzania, with results presented in a separate report (Samoilys and Kanyange 2008).

1.1 Study location

The Kiunga area is located in the northernmost part of the Kenyan coast, bordering Somalia in the north and stretching to the Lamu archipelago in the south (Figure 1). It is characterised by a hot and humid climate with rainfall of around 500mm per year. There are three natural reserves within the area, two terrestrial and one marine. The terrestrial reserves Dodori and Boni were declared a UNESCO Biosphere Reserve in 1980 (Church and Palin 2003). Kiunga Marine National Reserve (KMNR), gazetted in 1979 under

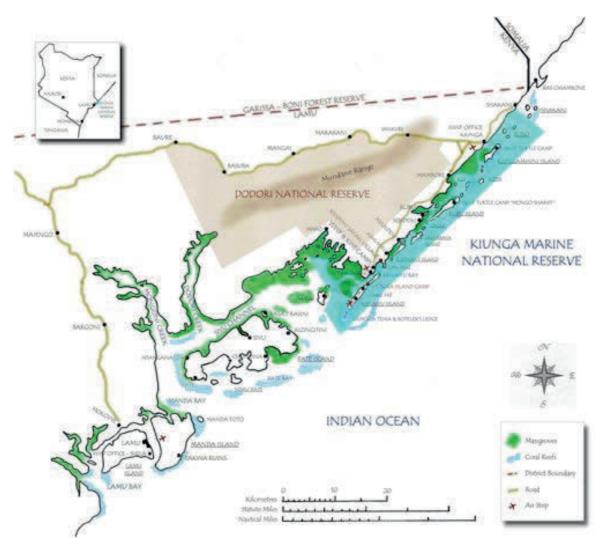


Figure 1. The Kiunga area (Source: WWF East Africa Regional Programme Office).

the Wildlife Conservation and Management act (1976) comprises a primary fishing ground for communities living in the area and from as far south as Lamu.

The location of KMNR at the convergence of the nutrient rich and cool Somali counter current and the East African Coastal Current makes the area highly productive. Patch reefs, seagrass beds, and extensive mangrove forest together combine to form interdependent bio-complex ecosystems that support high densities of marine fauna. The coral reefs of the KMNR and the Bajun Archipelago are, unlike the continuous fringing reef of southern Kenya or the extensive reef systems of Tanzania and northern Mozambique, marginal and not well formed due to the influence of upwelling (Church and Obura 2004). Nevertheless, at least in the past they have supported high densities of large predatory reef fishes, crustaceans such as lobster, and sharks (Samoilys 1988; Fielding and Everett 2000; Obura 2000; WWF 2001). Undisturbed sand dunes and beaches provide good habitat for turtle breeding, while some marine mammals such as dolphins, whales and dugongs reside in the waters for breeding and feeding (Church and Obura 2005). Mangroves provide habitat for the mangrove crab and birds, and a breeding ground for some fish species and crustaceans. These resources, specifically fishes, crustaceans and other invertebrates, are important for the artisanal, subsistence and semi-commercial fisheries within and around KMNR (Olendo and Weru 2006).

The coastal people of Kiunga, consisting of predominantly the Boni and the Bajun, are among the most remote and marginalised communities on Kenya's coast. The primary livelihoods of the Bajun are fishing and harvesting of marine resources, as well as household level farming. The Boni people, traditionally hunter-gatherers, are dependent on the reserves in the area for hunting and fishing as well as mangrove cutting, although their economy now relies more heavily on small scale farming and honey harvesting (Church and Obura 2004; Church and Palin 2003). Other income generating activities in the region include mat weaving, lime making, coral block cutting for construction and shell collection (Gubelman and Kavu 1996). The estimated population of Bajun and Boni people is now over 30000 and 4000 respectively (Weru in prep.).

1.2 Marine conservation, resource management and community development

Factors that restrict community development and contribute to unsustainable resource use cited include inadequate fresh water supply, insecurity, in large part due to the proximity to Somalia, poor infrastructure, lack of employment, and lack of incentives for sustainable utilisation of natural resources (Gubelman and Kavu 1996). Threats to marine resources include overfishing, exploitation of endangered species such as the critically endangered turtle and dugongs, global warming, and the El Niño phenomenon (Mwaluma 2003). The state of the world report by MacDonald and Nierenberg (2003) cited Kiunga as an example of the ways in which people are transforming Earth's natural systems by intensifying their use of resources in an effort to meet their needs.

Management of the Reserves in the area is the responsibility of Kenya Wildlife Service (KWS), a parastatal organization, with technical assistance provided by WWF. District level authorities in the area include the Fisheries and Forestry departments. Several non-governmental institutions operate in the area in collaboration with the national institutions, such as the Coastal Ocean Research and Development in the Indian Ocean (CORDIO) programme, and recently (2004) a community-based organisation, the Kibodo Trust, was established.

Despite the number of institutions and programmes in Kiunga region, having run separately or in collaboration for over 10 years, the socio-economic status of the local people has apparently not improved significantly, and may even be declining (pers.obs., Weru pers. comm.). Fisheries remain unsustainable (Olendo and Weru 2006). WWF (2001) identified issues such as inadequate capacity to enforce rules and regulations, lack of development policies in conservation objectives, lack of institutional coordination, conflicting interest and market failures as contributing to difficulties in managing marine resources. In addition, access rights to coastal land and sea as well as conflict between users, notably private tourism operators, government and local communities, is said to have become an issue (pers.obs.). Population growth and rising local and international demand for marine and terrestrial products, combined with decreasing stocks elsewhere in Kenya, are together taking their toll on the unique resources in KMNR that have supported local communities for centuries, putting a time limit on their traditional ways of life (Weru in prep.).

1.3 Study objectives

This study set out to examine resource use and development issues in Kiunga, in order to understand what constrains sustainable development in the area. The study asked local communities for their perceptions on these issues to provide a first hand community view on the importance of marine resources in their lives, what they perceive the problems are, and how they would like to engage in addressing them. Existing information on the link between coastal peoples' livelihoods and marine resource management was compiled, with a particular focus on fisheries, and past work on livelihood enhancement and associated capacity building, empowerment and participatory approaches to marine resource management in the area was analysed.

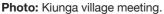
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Special attention was paid to the semi-commercial invertebrate fisheries associated with this area, particularly lobster and crab, as well as shark, mollusc and sea cucumber fisheries. Attention was also paid to the level and extent of involvement of the local community in the management of their marine resources and whether there are any user conflicts, particularly in relation to marine resource access.

2. Methods

The study was conducted in February 2008 covering seven coastal villages: Mkokoni, Mvundeni, Rubu, Kiunga and Ishakani on the mainland, and Kiwayu cha ndani and Kiwayu cha nje villages on Kiwayu Island. Mwambore village on the mainland has been completely abandoned due to banditry attacks in the 1970s. Residents sought refuge in Kiunga village and have never returned to Mwambore. The isolated and sparsely populated Ishakani, Rubu and Mvundeni villages were also abandoned following similar attacks but villagers have slowly returned since the early 1990s following improvement in security.

The study employed three methods: i) a literature review of recent publications and reports; ii) meetings with managers and key government officials, including village heads, KWS, Fisheries Department, WWF, and a tourism operator (Appendix 1); and iii) and a mix of focus group discussions and individual key informant interviews with 5-6 people in each village in KMNR (Appendix 2) using a semi-structured interview with set questions. These group and individual discussions are hereafter referred to as focus group discussions (FGDs). Focus groups were divided into two: i) village community based organization (CBO) representatives and village chiefs/headmen; and ii) fishers, representing five fishery types of concern, namely lobster, shark, mangrove crab, sea cucumber and cowrie shells.





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The literature search and analysis and the general discussions with key managers and government officials were primarily designed to answer the following three questions:

- 1. What is the level of dependence of local communities on marine resources?
- 2. What are the benefits to local communities from conservation and management initiatives?
- 3. What are the key issues/problems associated with fisheries in the area?

Village focus groups comprised representatives from the fishery types being investigated as well as those engaged in conservation and management activities, brought together with facilitation from Kibodo Trust village representatives in each village. The following questions were put to the focus groups:

- 1. What is the current status of each fishery?
- 2. What is the perceived level of exploitation comparing with the past?
- 3. How much does a fisherman catch and earn each fishing day? How does this compare with the past?
- 4. Have catches increased or decreased? Why?
- 5. Do the earnings provide an adequate income?
- 6. Where are the markets for each type of fishery?
- 7. How are the prices dictated?
- 8. What can be done to improve the fishery?
- 9. Are you involved in the management/co-management of the fishery and/or other natural resources? What co-management activities exist in the area?
- 10. What benefits do you get from conservation?
- 11. How is the community involved in tourism?

Analyses of the information gleaned comprised assessing changes in livelihood patterns by examining changes in catch rates and market prices for the important fishery types, and making comparisons across villages in terms of community responses to questions posed. Trends in fish catch based on reports from fishers as well as published information were also analysed using Statistica 6.0 software. Both survey and analysis were framed in view of outputs and recommendations from the national coastal community lessons learning workshop held in Kilifi in December 2007 (Becha 2008, see section 3.5 below).

3. Results and Discussion

In this section we present aspects of the state of the marine resources and the natural environment of KMNR and the socio-economic status of the local people and their livelihoods, and assess how they are linked within the context of three management and development approaches employed in Kiunga: 1. Conservation and resource management programmes (e.g. protection of resources, fisheries management); 2. Co-management (e.g. participatory approaches, community empowerment and related capacity building); and 3. Alternative Income Generating activities (AIGs).

Section 3.1 contains an assessment of the state of the key fisheries based on information obtained from fisher interviews and the literature. In section 3.2 we present and discuss conservation and management programmes. While not strictly a conservation or management programme, we include here a brief synthesis of the tourism operators in Kiunga Marine National Reserve because their objectives are in line with conservation and management, and they have socio-economic impacts on local communities. This is followed by information obtained on co-management approaches in section 3.3. In section 3.4 we present information on AlGs. Section 3.5 summarises the key recommendations from the national coastal communities lessons learning workshop held in Kilifi in December 2007 (see Becha 2008).

3.1 Fisheries

Fishing by local communities in the area is subsistence, artisanal and semi-commercial, employing simple vessels and gears, and fishing within mangroves and lagoons as well as the open sea, though not usually beyond the fore-reef. Non-powered canoes, wind propelled dhows and traditional gears are in common use as the acquisition of motorised vessels and modern gear is difficult for most fishers for financial reasons. In one village, Mvundeni, all fishing is done on foot and there are no fishing vessels, thereby restricting fishing time and fishing in deeper waters.

The artisanal/subsistence fishery depends entirely on coral reef fishes such as parrot fishes, wrasses, emperors, snappers, and in some instances pelagic fish including kingfish, dorado, tunas etc. Sharks and invertebrates (lobster, crabs, sea cucumbers) form semi-commercial fisheries and are unique to this area, compared to southern Kenya where these fisheries are less developed (in some instances depleted) and fin-fish are the major part of the coastal fisheries. Despite their importance in the area, shark and invertebrate fisheries are not well documented, except for lobster, which has received reasonable attention due to its high value.

Generally it was found that majority of the population was dependent almost entirely on fishing, with 100% of the adult population dependent on fishing in Ishakani and Rubu villages (Table 1). These are among the smallest villages in the Kiunga area, with less than 50 inhabitants each. The largest village, Kiunga/Mwambore has a total population of 2,800.

Fishers are neither fully involved in fishing throughout the year, nor are they, with some exceptions, highly specialised. During the low fishing season (the rough southeast monsoon during April-August) the majority are engaged in small-scale farming. The rest of the year is spent fishing, and depending on the ability and interest of the fisher many species can be targeted using different gears. However, high specialisation was found in shell collection, which is predominantly practiced by women. Sea cucumber collection, shark and crab fishing were also found to be more specialised than lobster fishing.

The communities in the area expressed strong concern over large commercial offshore fishing vessels operating near to shore, with e.g. purse seiners reported to damage the benthic substrate, including corals, while catching fish as well as sea turtles. Dead turtles frequently wash up on the beaches. According to people interviewed the vessels come close to shore at night and attract fish using bright lights, which may also pose high risk to turtle hatchlings by disorienting them.

These fleets consist of long liners, purse seiners and trollers (District Fisheries Department, Lamu), mostly foreign vessels licensed to fish in Kenya's Exclusive Economic Zone (EEZ), although some are illegally operating without licenses, as occurs in much of Somalia's EEZ (Samoilys et al 2007a). Such commercial vessels are not allowed

Table 1. Numbers of fishers in the Kiunga area, based on village level focus group discussions, February 2008.

Village	Total pop.	Adult pop.	No. of fishers
Mkokoni	1200		100
Kiwayu cha ndani	150		15
Kiwayu cha nje	500	280	
Kiunga and Mwambore	2800		300
Ishakani	15	10	10
Rubu	40	30	30
Mvundeni	25		10

to fish within Kenya's 12nm territorial waters, but this is not enforced due to inadequate resources in the Fisheries Department, which has few effective patrol vessels, although the department claims to closely monitor the situation in collaboration with the Navy. Local communities report that vessels are still frequently present, and complain that action is rarely taken by the authorities in response to their reports. It is however also said that the American Navy have been stationed in the Kiunga area over the last 1-2 years and this has been every effective at deterring the large commercial fishing vessels.

Focus group discussion findings for each of the key fisheries addressed in this study are presented in the following sections. The information is also summarised by fishery type and village in Tables 2 and 3. Distinct differences between villages were few but are noted.

3.1.1 Sea cucumber collection

Sea cucumber (beche de mer) trade in Kenya can be traced back to 1900 through fragmented records (Muthiga et al. 2007). Within less than a quarter of a century, there was already concern for over-fishing, and the sea cucumber fishery in Kenya is now considered under threat of over-exploitation (Muthiga and Ndirangu 2000). Sea cucumber harvesting is regulated by the Department of Fisheries and a special license is required. Collection of undersize beche de mer is prohibited under the Fisheries Act (Government of Kenya 1991), though "undersize" is not defined. Collection within marine National Parks is not allowed under the Wildlife Act (Government of Kenya 1976).

Collection is optimised at night as during the day sea cucumbers seek refuge mainly in channels, tidal pools and beneath sea grasses to avoid desiccation. Fishermen in KMNR reported current catches of between 7 and 25 pieces/fisher/day (Table 2). Muthiga and Ndirangu (2000) reported 12 to 30 pieces/fisher/day in Gazi, southern Kenya. Prices depend on the grade (species and length). According to collectors from Rubu, in the last seven years there has been an increase in price of 17 % per kilo of 1st grade sea cucumbers, while catch rates have decreased by 67%. Change in sand dynamics in the channels was cited as one of the reasons leading to decline in catches, while it was generally consented that the number of collectors has increased.

3.1.2 Shark fishery

Shark fishing through set gill nets (jarife) has been in practice for many decades. Shark catch rates have declined dramatically over the last 40 years, in the order of 85% (Table 2, Figure 2), but prices have not increased significantly, except for shark fin (Table 4).

The trade in shark fins dates back to the 1960s, or even earlier according to some fishermen interviewed. Shark fins, used in shark fin soup, are considered a delicacy in Asia, and this market has escalated in recent years. A saleable amount of shark fin, c.10kg dry weight, may take a fisher up to a year to accumulate, as it

Table 2. Fishers' perceptions of fisheries in the Kiunga area, from village focus group discussions, February 2008. Changes in catch per unit effort. A fishing event is the time a fisher goes out fishing, from departure to return to the landing site (it may exceed one day depending on the soak time of the gear, e.g. nets). Catch rates are provided from the past (years variable, as indicated) and present (2008), as reported by fishermen. Not all fisheries were represented in each village.

	Mkokoni	Kiwayu cha ndani	Mvundeni	Rubu	Mwambore/ Kiunga	Ishakani
Lobster						
Past	10-15 (1998)	20-25 (2000)	3-5 (2003)	20-30 (1998)	5-20 (1995)	
Present	0.5-5 (2008)	2-3 (2008)	1-3 (2008)	0-8 (2008)	0-10 (2008)	
Shark						
Past			10-12 (2001)	10 (1980s)	20-40 (1970s)	10 (1950s)
Present			2-3 (2008)	0-2 (2008)	1-2 (2008)	1-2 (2008)
Crab						
Past		10 (1990s)	15-20 (1980s)			
Present		2-5 (2008)	0-10 (2008)			
Sea cucumber						
Past			6-17 (2004)	25-40 (2001)		
Present			7-11 (2008)	11-25 (2008)		
Cowrie shells						
Past			20-30 (1998)		200-300 (1980s)	200 (1970s)
Present			0-10 (2008)		50-100 (2008)	20 (2008)
_						

Table 3. Fishers' perceptions of fisheries in the Kiunga area, from village focus group discussions.

		ndani			Kiunga	
Economic sus	stainability of	fisheries				
Lobster	not		a few months	a few months	a few months	not always
	sustainable		in a year	in a year	in a year	sustainable
Shark			not always	not	not	not sustainable
			sustainable	sustainable	sustainable	
Crab		not				
		sustainable				
Sea			not always	not always		
cucumber			sustainable	sustainable		
Cowries			not		not	not sustainable
			sustainable		sustainable	
Perceived rea	sons for cato	h decline				
Lobster	Tsunami		increased no. of	increased no.	el Niño:	el Niño; tsunami;
·==:='	31 151 111		lobster fishermen	of lobster	tsunami;	red tide;
				fishermen; change	red tide;	dumping*;
				in weather	dumping*;	foreign fishing
				conditions	foreign fishing	vessels; SCUBA
					vessels	fishers from
						Somalia
Shark			foreign fishing vessels	el Niño; tsunami;	el Niño; tsunami;	
		tide; foreign		red tide; foreign	red tide;	red tide;
		fishing vessels		fishing vessels; fishermen from	dumping*; oil exploration	dumping*; oil exploration
		VESSEIS		Kizingitini	on exploration	on exploration
Crab			too many crab	-		
			fishermen			
Sea			increase in sand cover	increase in sand		
cucumber				cover		
Cowries			changes in sand		sea urchin	increased sea
			dynamics		infestation;	urchin
					increased no. of	infestation
					collectors	
Proposed sol	lutions/respo	nses to declin	ing catches			
Lobster	AlGs;		provide fishing gear;		eliminate SCUBA	provide fishing
	closed		improve transport	market chain,	fishers from	gear
	areas or			transport and	Somalia;	
	seasons; enforce			communication	lobster aggregating	
	legislation				devices; AIGs	
Shark	-3	provide	provide fishing gear;		provide offshore	provide fishing
Onan		fishing gear	AIGs		fishing vessels	gear, offshore vessels
Crab			coordinate fishers;			
			rotational closures			
Sea			AlGs			
cucumber						

Table 4. Price comparisons for the major fishery types in the Kiunga area in the last decade (in KES per kg, except for sea cucumber and cowries, in KES per piece).

Fishery	1998	2008
Lobster	300	700
Shark	100	120
Shark fin*	200	4, 700
Mixed fish	5	40
Crab	-	250
Sea cucumber	-	2,500
Tiger cowries	0.7	1

requires fins from around 150 sharks. However, shark fins can fetch a high price depending on the grade, and ten kilogrammes of high-grade fins is worth at least KES 35,000 (approx. USD 555, Table 4). It should be noted that sharks landed are used fully, with e.g. liver oils applied to treat wooden boats and the meat often salted and dried, and shark is not fished purely for the fins.

3.1.3 Cowrie and shell collection

Cowries have been used for various reasons for millennia, including as currency as well as for decoration. A marine shell discovered in Tsavo National Park in 2003 was dated to between 1305 and 1425 years BP, concurring with the period of early development of Swahili civilisation in the Indian Ocean (Akuma 2003; Chapurukha 1999). Today, cowries are used primarily for decoration in homes, public places and for jewellery.

The collection of cowrie and other mollusc shells is an important income generating activity in Kiunga, especially for women (IUCN 2004), but e.g. lobster fishers may also collect cowries while searching for lobster. Small cowries (Cyprea annulus) are threaded on string as necklaces while individual tiger cowries (Cyprea tigris) are sold directly to dealers or tourists.

No specific license is required for shell collection, and there are no restrictions on national trade. However trade in some molluscs is banned or regulated by international law, especially the endangered giant triton, and there has been significant awareness campaigns over the last 30 years to reduce the trade. Some tourist companies have launched environmental programmes to discourage tourists from buying shells and shell products to promote responsible tourism.

In previous years when there was an open international trade in shells and stocks were abundant, collectors made a living out of it. In the last half century, a collector could collect 200 shells in a day worth c. KES 200,





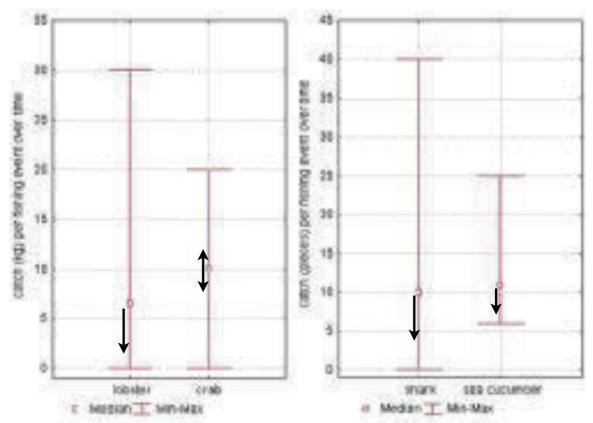


Figure 2. Range in catch per fisherman per fishing event and trend over time (indicated by arrows), for lobster (over the past 13 yrs), crab (28 yrs), and shark (68 yrs) in kg, and number of sea cucumbers (7 yrs), based on values given by fishers in focus group discussions, February 2008. The box and whisker plot illustrates the range in catch rates given for the entire period between 1960 and 2008, and the median catch. The position of the median value relative to the reported present catch rates, represented by low catches, was used as an indicator of the direction of shift in catch rate over time. Thus a median value closer to the present catch rates implies a shift from high to low catch rates. Catch rates appear to be declining, as indicated by the arrows, except for crab where data were not adequate to reveal trends. Note that fishermen may experience zero catches, except with sea cucumber.

compared to the current normal daily collection of 30 shells worth only KES 30. In 1993, 70.7 metric tons of cowrie shells were collected in Kiunga, worth only KES 85,820 (Gubelman and Kavu 1996).

Prices of tiger cowries in KMNR have remained roughly the same over the last 15 years (Table 4). Similarly, the price of cowrie chains has not changed significantly, although this could have been expected in view of the reduction in numbers collected and in view of inflation. Additionally, due to lack of an established marketing strategy, there are few buyers and they often fail to turn up for as long as a month. This suggests that shell collection trade is the economically least viable livelihood in the fishery sector within the Kiunga area.

3.1.4 Lobster fishery

The Kiunga area is renowned for its lobster, but the fishery is generally perceived to be over-exploited. A study conducted by the Oceanographic Research Institute (ORI) in 1999 in KMNR stated that the fishery was probably fully exploited, with mean densities of lobster similar to those of other exploited tropical lobster fisheries around the world (Fielding and Everett 2000). Catch per unit effort measured during that study (1999) was on average 0.5 kg per fisher per day, which is similar to the catches reported today (Table

2), but significantly lower than catches 10 years ago as reported by fishers in focus group discussions (up to 30kg per fisher per day, 1995/8, Table 2). Information obtained in this study suggests a decline of c 50% in catch rates in the last 13 years, depending on the season (Figure 2, Table 2), and coupled with the findings of Fielding and Everett (2000) is cause for concern.

Although a special license is required for lobster fishing, and the taking of berried (females with eggs) and undersized (<0.25kg) lobsters is banned, adequate protection is lacking, mainly due to lack of reliable monitoring data, lack of compliance by the lobster fishers and inadequate enforcement. While fishermen recognise the need to protect berried females and young lobsters, irresponsible fishermen continue to catch them, undermining the fishery.

In the last 10 years, live lobster prices have increased by c. 70% (Table 4). Frozen lobster prices ten years ago were even lower at 10% of current live prices. Increased demand has led to the entry of more dealers in live lobster onto the market and, together with a decrease in stocks, contributed to the price increase. Dealers in live lobster, reported to operate from Malindi, dictate the prices at which fishers sell their catch. They often visit landing sites for two to four weeks, gathering lobsters in cages, grading them and ferrying them to distribution centres in either Malindi or Lamu.

There is no doubt that the earnings of lobster fishers in the Kiunga area have generally decreased in spite of price increases, while effort in terms of fisher number and time spent fishing has increased. While some fishers concede that the perceived decrease in catch rates is at least in part due to an increased fishing effort, most associated it with the following:

- 1998 El Niño phenomenon that resulted in coral bleaching and mass mortality, affecting lobster population dynamics;
- 2004 tsunami that destroyed both lobster habitats and breeding grounds, and led to increased turbidity;
- · General change in the state of the ocean, perhaps global warming;
- Poachers from neighboring Somalia collecting lobster illegally using SCUBA;
- Coral disturbance following incursion into the fore reef by foreign commercial fishing vessels; and
- Recent oil exploration that has disturbed habitats by drilling and noise

Photo: Lobster cage and berried female at Mkokoni village.



3.1.5 Mangrove crab fishery

Mangrove crab fishing is an important livelihood along the Kenyan coast, especially in Kiunga where the highest density of mangroves is found. However, data on the fishery is scarce. The crab market is not well established compared to that of lobsters, and fishers sell their catch mainly to nearby tourist resorts as buyers from Lamu are unreliable and transport is difficult.

Fishermen reported decreased catch rates of around 50% over the last 20 years (Table 2, Figure 2), with a price increase of 86%. However, prices have remained almost unchanged in the last two years, while catch rates have continued to decline. Fishers cited having to travel longer distances to find crabs as an example. Consequently, in the last 10 years, earnings have dropped by half (from KES 1000 to KES 500 per day) and zero catches are now common (Table 2, 3 and 4).

Focus group discussions largely attributed this decline to increased numbers of fishers (Table 2), but also mismanagement. Crab fishing requires a special license from the Fisheries Department, and fishing of <0.5kg and berried crabs is not allowed. Unfortunately, adequate monitoring and documentation is lacking. Those interviewed seemed to be aware of these regulations, even the ones operating without a license. In view of the high number of crab fishers in KMNR, fishers suggested a closed rotational system of management. This would require strong cooperation among fishers, which would in turn require strong coordination by the Fisheries Department and Kenya Wildlife Service.

3.1.6 Summary findings from fisher interviews

Both catch rates and income from the targeted resources of lobsters, sharks, crabs and shells were reported to be on the decrease. In the case of sea cucumbers an increased price compensates somewhat for reduced catch rates, making it an economically viable fishery, although not throughout the year. Consequently sea cucumbers are collected in most villages. A dramatic increase in lobster prices in the last five years has been accompanied by increased fishing effort and reduced catch rates, and the fishery now seems over-exploited. Shell collection, once an important income earner especially for women, is now the least viable livelihood option in the fishery sector in the Kiunga area.

Fishers reported varied reasons for the dwindling stocks for each of the fisheries, the primary ones being increased fishing effort (fisher and vessel numbers), degradation related to the 1998 El Niño phenomenon, a red tide in 2003 and the 2004 tsunami, as well as increasingly rough sea conditions.

Fishers perceived fishery declines were largely beyond their control and they would prefer to either venture further out to sea to target different fishery resources, or shift to other income generating ventures. There were some calls for improved management, particularly enforcement of Fisheries Regulations by the Fisheries Department, but on the whole this was not a major recommendation, and due to declining earnings, fishers called for intervention in alternative livelihood activities. This suggests fishers in KMNR do not perceive KWS and Fisheries Department interventions as a crucial way of ensuring their fisheries are managed sustainably.

Notably, fishers in the KMNR did not report conflict over resource use. They did state that fishers from further south, particularly Kizingitini on Pate Island, were the main reason for the increase in fishing pressure in KMNR in the last decade. However, they did not imply that these fishers had no right to fish in the KMNR. In fact, fishers from the whole Lamu archipelago have traditionally fished in the KMNR for centuries (Ali Mwachui, pers. comm.), and Kizingitini is renowned as a large centre of fishers in the region.

3.2 Conservation and management programmes

WWF's KMNR Conservation and Development Project is the largest programme in the area, having been active in Kiunga since 1995 through a wide range of marine conservation initiatives. The project focuses on

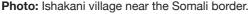
"establishing institutional and regulatory frameworks for effective management of KMNR, strengthening management operations, collecting and analysing information on ecological, economic and social trends to inform management, ensuring all community stakeholders fully participate in conserving marine resources, and facilitating government agencies to support communities' sustainable use of KMNR resources as well as exploring livelihood improvement options" (Weru 2007).

On-going initiatives that impact on marine resources in Kiunga, mainly focusing on conservation, research, health, capacity building, education and general community development are presented below. Their role and impact on local communities is also discussed.

3.2.1 Education and awareness

The education and awareness programme of WWF covers environment and conservation, in partnership with CORDIO, Wildlife Clubs of Kenya, Watamu Turtle Watch, Ministry of Education and KWS. Students, pupils and the local community have been involved in various environmental awareness and education activities. Nine environmental clubs have been established in schools around KNMR that deal with, among other things, tree planting and waste management (Adam 2007). In 2006 WWF supported the participation of ten students in a two week eco-holiday activity training programme, which included turtle nest monitoring and patrols, underwater surveys, mangrove identification, ecosystem walks and beach clean ups (Adam 2007). During the same year, teachers from Kiunga region were involved in a provincial coastal training programme facilitated by CORDIO where teachers were trained in environmental education and teaching methodologies. In 2007, 23 students benefited from a 50% fee subsidy by WWF's scholarship programme that targets the top two students from each village. WWF also assisted in printing and distribution of education material to over 1,534 students within the KNMR (Weru 2007). The community continues to benefit through training on natural resource management, delivered as a package that includes health and other issues of concern.

Despite considerable support to education, especially among the youth, it is still not clear to the community who is the beneficiary (Max 2002). There was no doubt that some village members interviewed during the current study fully appreciated the school education support by WWF, yet others did not cite them at all. Max (2002) further pointed out that fishers' perceptions of the WWF initiatives in general are not well documented and need further review. Assessing the impacts of education programmes associated with environmental conservation, and inputs to school curricula is not easy (Mzava et al 2007) and requires standardised monitoring to assess change in peoples' behaviour in the long term, which is often beyond the scope of conservation programmes.





3.2.2 Sea turtle conservation initiative

The sea turtle conservation programme was initiated in February 1997 by WWF involving local communities, visitors, government departments and international institutions, following continued extraction of turtles by the local communities (Church and Palin 2003). The programme is a member of the Kenya Sea Turtle Conservation Committee (KESCOM) and its focus is on conservation of the critically endangered turtles and community education. A carefully selected youth team is responsible for monitoring and patrols. However, the initiative is faced with many challenges such as inadequate funding and lack of an enabling institutional and policy framework for youth patrols and monitoring.

Turtle protection was first encouraged through compensatory fees. Initially, a fee of KES 500 was given for sighting a nesting turtle, and KES 20 for nursing the eggs and hatchlings. WWF sent field patrols to verify the reports before paying the fees. The intention was that once community support for turtle protection was well established the fees would be gradually reduced and then removed. By 2004 fees had been reduced to KES 200 and KES 5 respectively, a move some villagers are not happy about. However, incentive payments are planned to be withdrawn completely through a community youth turtle ecotourism initiative implemented jointly by WWF and KWS.

The sustainability of compensatory conservation initiatives is always problematic, though may be the only solution to start with in such impoverished communities, and when linked to other income generating initiatives as in this case, can be very successful. WWF cite an increase in the number of brooding turtle sightings reported by the villagers in the year 2007. Many of the interviewed villagers expressed commitment to turtle conservation even if no compensation is available. One fisherman mentioned that turtle trapping for consumption no longer takes place, and when asked for his priority recommendation he requested a clean marine environment to avoid turtles eating plastic rubbish. Several villagers expressed concern over the by-catch of turtles by offshore foreign fishing vessels (purse seiners), stating that their turtle conservation efforts were being undone and the Fisheries Department were not acting to keep these vessels out of Kenya's territorial waters.

3.2.3 Coral reef, fish, lobster and invertebrate monitoring programme

Following mass bleaching of coral reefs in the Indian Ocean in 1998, a collaborative environmental and resource status monitoring project was initiated in KMNR in 1999 by WWF, KWS and CORDIO (Church and Obura 2004). WWF also commissioned ORI of South Africa to assess lobster populations, fishery status and to train a local team to monitor the fishery. Indicators were agreed and monitoring is still ongoing, carried out by scientific staff, project and government officers and fishers, in collaboration with the Department of Fisheries.

Community involvement in research activities by WWF, CORDIO and KWS has on the whole been limited because of the scientific nature of the work, and because much of the survey work is conducted on SCUBA, both of which require significant training. However, several fishers have remained involved in the programme since the inception. Some fishers mentioned one of the key lessons from their participation in the coral reef monitoring programme was learning about coral cover changes and the broader implications of coral bleaching.

Despite this long term research programme and the information it provides, effective management of marine resources in the KMNR is hampered by a lack of clearly defined reserve regulations and limited management activity on the ground (Church and Obura 2004).

3.2.4 Gear exchange programme

A fishing gear exchange programme was initiated in 2003 by WWF, in collaboration with the Fisheries Department and with funding through the Vodaphone Group Foundation. Fishermen were given gill nets (jarife) on loan after surrendering illegal gears, primarily beach seines (juya) and mosquito nets (Weru 2007, Weru pers. comm.). The programme focussed mainly on communities south of the Reserve in Kizingitini,

Faza and Pate, because most fishers using illegal gears are from these islands. About 290 fishermen benefited from the programme.

However, there have been several challenges. Fishermen report illegal gears are still being used and several have not paid back their loans received in association with gear exchanges. In addition, complaints were heard from some villages, especially Kiunga/Mwambore and Kiwayu cha nje about being excluded or given the wrong gears. These results are not surprising considering gear exchange programmes are invariably fraught with problems and difficult to manage, their impact is difficult to measure, and they are rarely successful as a fisheries management initiative (Samoilys et al 2007b).

3.2.5 Kibodo Trust

Kibodo Trust was established in 2004 and seeks to help conserve the Kiunga Marine National Reserve, Boni Forest Reserve and Dodori National Reserve, while improving the standard of living of the people in the area. Activities focus on capacity building and initiation of alternative livelihoods strategies for the Boni and Bajuni communities currently dependent on natural resources. Kibodo has the potential to fill a vacuum in the area of social, support and advocacy services that will be particularly important as the area opens up to development.

The Trust works in collaboration with KWS, CORDIO and WWF and has recently run village elections to appoint community representatives throughout the region. Kibodo is now installing a radio transmitter for use within the region, in response to poor communication infrastructure. Villagers are expecting to use the facility to enhance marketing of their products, among other benefits.

3.2.6 Private tourism operators

There are two main resorts in KMNR, Kiwayu Safari Village (KSV) near Mkokoni and Munira on Kiwayu Island. KSV was established in 1974 and has a bed capacity of 60 beds, Munira in 1992 with a bed capacity of 25. There are no other substantial tourist lodges in the region, though there is a small lodge in Kiwayu village (3-4 bed capacity) and a small eco-lodge in Mkokoni village (8 beds) owned and run by one of the villagers.

The resorts provide casual employment to local people, a market for lobsters, crabs and fish, and also emergency transport and health service, especially during illness and rescue operations of capsized or distressed boats. Munira has assisted in classroom construction in Kiwayu cha ndani village, where only lower primary school education is available. Plans are underway to construct a water-harvesting tank (jabia) in the village.

Public relations of the tourist operators are not always good, and years of antagonism between KSV and Mkokoni villagers was reported, though it was stated that this has now disappeared under the new management of the lodge. Kiwayu cha ndani villagers indicated that they wanted more benefits, especially in securing jobs, pointing out that all the skilled jobs went to outsiders who then rented houses in their village. They did however recognise that their inadequate education and skills for hotel work was an issue. Notably, none of the villagers interviewed in Kiwayu cha ndani mentioned Munira's contribution to building the classroom or the jabia.

3.2.7 Conclusions on management and conservation programmes

Many villagers, but not all, appreciated the benefits they received from WWF's various community programmes such as improvements in their education and health. There was no mention that WWF's or KWS's conservation and natural resource management programmes have improved the status of the fishery resources, and very few villagers stated that they had benefited from the presence of WWF and KWS in terms of improvements in their fisheries, even though these are their primary source of income. The only stakeholder who clearly stated a benefit in this regard was the tourism operator at Munira, who said that the presence of KWS had greatly improved the state of the marine resources and this was of great benefit to

Table 5. Village perceptions of comanagement.

	Mkokoni	Kiwayu cha ndani	Kiwayu cha nje	Mvundeni	Rubu	Mwambore/ Kiunga	Ishakani
Co- management activity	WWF turtle conservation KWS tour to Malindi and Shimoni	WWF turtle conservation	WWF turtle conservation			KWS tour to Malindi and Shimoni	no active involve- ment
Benefits from conservation initiatives	cleaner beach	no benefits	WWF school fee subsidy program	cleaner beach	cleaner beach	no tangible benefits	no benefits
Community involvement in tourism	20 casual workers at tourist lodge	one person involved in tour guiding at tourist lodge	14 casual workers at two tourist lodges; tour guiding during peak season	no tourist activity	no tourist activity	occasional tourist visits	no tourist activity

tourism. This finding indicates that local communities appear to view conservation efforts as somewhat separate to their primary livelihoods of fisheries and not directly benefiting them, except through side programmes such as education and health. Direct benefits to the community from the participatory environmental and resource monitoring programmes were considered minimal, though there was a perception that the work was important for the management of the area.

Community support for turtle conservation was very high, even without incentives, indicating the programme has been very successful as a conservation measure, and suggesting villagers do now view turtles an important resource to be protected. This is now being built on further through developing turtle watching eco-tourism. However, this success is likely to be diminished if the by-catch of turtles from offshore foreign fishing vessels is not addressed as a matter of priority by the Fisheries Department, in partnership with KWS.

3.3 Comanagement

Collaborative management in Kiunga region has met with many challenges that still remain today. The key issue is that the communities living within the Reserve are highly dependent on marine resources, yet largely living at or below the poverty line. They therefore see themselves as marginalised by government and without authority, especially since natural resource management in Kenya has a history of top-down approaches. Communities tend therefore to be suspicious of the relatively recent co-management initiatives. No tangible benefits specifically associated with co-management initiatives were reported, and most villagers cited the conservation programmes as the beneficiaries (Table 5, see also section 3.2).

3.3.1 Natural resource management policy

Over the last decade there has been a shift in policy both within government (KWS and Fisheries Department) and within large conservation agencies such as WWF, towards a much more participatory approach to conservation and management. The recent Fisheries legislation on locally established Beach Management Units (Government of Kenya, 2007) is an example of this.

The Environmental Management and Coordination Act (Sec 42, Part v, Government of Kenya 1999), while providing for special guidelines for access to and exploitation of living and non-living resources in the continental shelf, territorial sea and the Exclusive Economic Zone, emphasises that the interests of the people surrounding these resources shall be safeguarded. The draft Wildlife policy (Government of Kenya 2007b), although largely limited to protected areas including no-take zones, recognises the need to establish collaborative management arrangements and joint ventures that enhance local community and private sector involvement in management. Currently there is no policy or concession requiring contribution of any kind from parks and reserves revenue to the neighbourhood.

In response to these shifts in policy KWS has formed a co-management team in KMNR, comprising of three representatives from each village in the Reserve, and representation from WWF, tourism operators and the Kibodo Trust. Team members have been taken for a learning tour to Malindi, Shimoni and Baringo National Parks and Reserves. However, villagers felt it was not clear how the community will benefit from this initiative and lamented that no specific criteria were followed to elect the representatives, insisting prior consultation before further arrangements were put in place.

3.3.2 Beach Management Units

The Beach Management Unit (BMU) concept was borrowed from Lake Victoria fisheries management with the aim of improving fisheries resource management by incorporating the prime stakeholders into a management unit comprising of an assembly, executive committee and a sub-committee (Oluoch 2006). The subsidiary regulations were passed in 2007 after much consultation. The objectives of the BMUs are many, but include effective fisheries management including compliance with regulations, alleviation of poverty, and sustainable development of the fishery sector.

The Fisheries Department oversees the running of the units by approving management plans as a means of broadening stakeholder participation in fisheries management. The Department is also, though with limited financial and technical capacity, providing training to BMU members. Among the stipulated responsibilities of BMUs are resolving user conflicts, field patrols, ensuring a healthy fishing and landing environment, data collection, enumerating by-laws, ensuring safety in the ocean, control of illegal gears and fishing, protection of breeding sites and maintenance of high fish quality standards.





One of the problems with the BMUs as currently defined in the legislation, reflecting their design for lake fisheries rather than marine fisheries, is that a BMU is meant to be established for each landing station, although there is provision for one BMU to be established for two or more landing sites. This small spatial scale focus at the landing site, which usually equates with a village, is problematic since fishing grounds are open access and fishers from several neighbouring villages may fish the same resources in the same fishing grounds. There is therefore great potential for conflict between different BMUs trying to manage the same area and the same resources. This was clearly illustrated in a long-running fisheries management project in Tanga, Tanzania, which chose to steer away from a village level approach to fisheries management in favor of "Collaborative Management Areas" (CMAs) comprising the "home fishing grounds" shared by a group of fishers (Wells et al 2007, a,b). Already, fishermen around Kiunga Marine National Reserve are under pressure from relatively well-off fishermen from Kizingitini who also fish in the Reserve. It will be essential that BMUs established in the Kiunga area cover several landing sites and involve as members residents from nearby villages who fish in the area covered by the BMU. Another approach might be to establish BMUs by fishery rather than by landing site, but coordination mechanisms between bodies would need to be sound.

The Fisheries Department-led process of establishing BMUs in the Kiunga area has not been smooth. The Department has tried to encourage fisher support through donations of out-board engines, disbursed to Kiunga, Kizingitini, Faza and Lamu with the assumption that fishermen will fit them onto their vessels for use. The Fisheries Department is also calling for assistance from private and non-governmental institutions to help in BMU establishment and management, and WWF has initiated a five-year programme in partnership with the Department.

The focus group discussions revealed that the community still perceives the BMUs as being another arm of government administration, and they are suspicious. Training and further consultation is ongoing to instil a sense of ownership, with the main focus on the formation of by-laws harmonised across different areas to see to common interests and reduce sources of conflict. Other challenges such as sustainability are being looked into. Eventually, when BMUs are fully instituted, management of marine resources is expected to improve significantly.

3.3.3 Land access

Villagers in the KMNR still do not own the land they live on in spite of promises from the government to address this. The government initiated a land programme in the early 1990s to give villagers title deeds, but to date this has not eventuated. There is also a lack of recognition of territorial user rights by the government of Kenya. As much as fishers would want to control resource extraction within their area, fishing is still an open access activity, and considered thus by the government – the well-known "tragedy of the commons". Thus 'poor' fishers still remain vulnerable to exploitation by the 'richer' ones, and all have little incentive to manage their fishery resources properly. It is hoped that the BMU concept can be adapted to address this significant issue in the artisanal fisheries of Kiunga.

3.4 Alternative Income Generating Activities

In recognition of the increasing human pressure on limited marine resources, some alternative income generating (AIG) activities have been carried out in the Kiunga area, and more are being initiated. For example, in 2007 KWS donated a commuter ferry to Mkokoni Women's Group to aid its welfare activities. The ferry is now making regular trips from Mkokoni to Lamu, though not daily due to the low number of commuting passengers. However, to date there are few AIGs in the Kiunga area that have made a substantial impact on the village communities.

Projects presently under discussion will venture into eco-tourism, horticulture and mariculture. The senior chief of Mkokoni village has already successfully approached the National Agriculture and Livestock Extension Programme (NALEP), Ministry of Agriculture and Livestock Development, to train people in semi-arid horticulture. Through the chief and other collaborators, a proposal has been submitted to a donor,

which, if successful, will establish agribusiness, and mariculture as well as eco-tourism projects such as prawn and butterfly farms, game drives and mangrove boardwalks. In addition, CORDIO, in partnership with Kibodo Trust is developing a proposal to test the feasibility of aquaculture in the region, and Kibodo Trust has recently started a community development programme.

3.4.1 Eco-Friendly handicraft project

The Eco-friendly handicrafts project was started by WWF in 1997, with funding from the Integrated Conservation and Development Project. The project focuses on gender sensitive conservation; habitat, environmental health and waste management; and fisheries management (Flintan 2002). Flip-flops washed up on beaches are collected by youth and women and transformed into creative artefacts such as key rings, necklaces, bracelets, curtains, cushions and mosaic pictures. Several artists, both women and men, are involved, operating from their homes on Kiwayu Island and in Mkokoni village. Products are sold locally, regionally and internationally, through various channels including private companies (e.g. UniquEco Designs Ltd) and WWF and its partners such as the Kenya Gatsby Trust.

The project is one of the few alternative livelihood projects that appears to be successful from a business perspective, and has genuinely brought additional income to participants, notably women, in two villages. Many of the villagers cited this as a positive introduction from WWF and villages currently not involved expressed a wish to engage. However, some marketing and market access constraints remain.

3.5 National coastal community lessons learning workshop

A national coastal community lessons learning workshop was held in Kilifi, Kenya, between 17 and 19 December 2007 (Becha 2008). The workshop brought together 26 participants from 24 community-based organisations in Kenya, representing a diversity of interests including resource user groups, advocacy and lobby groups, women's groups, conservation and resource management groups as well as alternative livelihood and income generating initiatives.



The workshop sought to develop a vision and strategies for a sustainable future, by putting forward concrete recommendations on improving marine resource management and enhancing the environmental and financial sustainability of livelihoods. Key recommendations are summarised below (Becha 2008):

- 1. The government should institute a review of all laws and policies with a bearing on marine and coastal resources in order to harmonise them and minimise contradictions, conflicts and overlapping institutional mandates.
- 2. Laws and policies should be written and disseminated in Kiswahili, a language a majority of the fisherfolk and local communities can read and comprehend.
- 3. All encroachment and illegally acquired fish landing sites and public beach land should be repossessed, surveyed, gazetted and placed under the title of the Fisheries Department for public utility.
- 4. Mechanisms should be established to ensure local communities play a significant role in management of Marine Protected Areas. At the same time the economic benefits of these protected areas should be ploughed back into local communities.
- 5. Emerging community managed marine areas should be recognised and given appropriate legal mandate.
- 6. Capacity building in community-based marine tourism via training and skills development should be made available through a government development fund.
- 7. The community should be actively involved in policy formulation through functional grassroots and national fisherfolk networks like the Kenya Marine Forum.
- 8. The annual budget allocation for the Ministry of Livestock and Fisheries should be increased and equitably shared between the Livestock and Fisheries sectors.
- Studies should be commissioned as a matter of priority to demonstrate that good fisheries legislation
 and management is economically linked to poverty alleviation and improvement in coastal peoples'
 livelihood.

Only one representative from the Kiunga area (from Kiwayu cha nje) was present throughout the workshop, and therefore some of the issues in that area may have not been captured well in the national workshop. Nevertheless, the issues leading to the nine recommendations above were touched on in the focus group discussions conducted in the Kiunga area, and we conclude that the communities from Kiunga would support these recommendations. Those that were not discussed in any detail and therefore could not be assigned as representative of issues in Kiunga are 1, 7 and 8.

4. Conclusions and Recommendations

Management and conservation interventions by different institutions in KMNR have impacted positively on the lives of the people living in Kiunga, primarily through providing health, education and transport services. However, the socioeconomic status of the people has improved little. The reasons for this are manifold, including the remoteness of the area, very moderate infrastructural development over the past two decades, and the low connectivity with external markets this entails.

With little development in the region the people living in KMNR are still highly dependent on natural resources for their livelihoods, predominantly fishing: 95-100% dependency in terms of income was recorded. However, fisher catch rates and earnings are declining, apparently due to a deteriorating resource status caused by a number of stresses, both local, such as increasing human populations, overfishing and destructive fishing, and external, such as climate change related effects. Existing management initiatives in the area have in spite of many successes failed to turn the negative trend in resource status and income from fisheries. Co-management initiatives are still relatively recent and have yet to reap tangible benefits in terms of improved fisheries management and improved livelihoods.

It is clear that the links between natural resource health and local livelihoods, income and indeed overall quality of life are very direct. However, it is also clear that both the people in the Kiunga area and its

environment, as well as the relationship between them, are highly impacted by processes on national and global levels. This includes e.g. mechanized ships fishing illegally in near shore areas, changes in markets and commodity prices, legal and policy developments, as well as a changing climate. Solutions to the problems facing the people in the Kiunga area thus need to be sought locally as well as nationally and regionally.

Considering the high levels of poverty and dependence on natural resources, alternative income generating activities now need to be vigorously pursued as a development strategy. The area has enormous wealth in terms of eco-tourism as it is has very high aesthetic value due to the minimal development and highly diverse ecosystems. Existing tourism ventures are undertaken by private investors who provide casual jobs and other crucial services, but community based eco-tourism has not yet become established. This is an area that requires input and support, including empowering the local population e.g. through addressing land tenure, as well as providing necessary capacity building and access to financing schemes.

The Kiunga region sustains some important and valuable fisheries, notably the lobster and mangrove crab. With strong regulatory control, better participatory management through effective BMUs that target these fisheries and effort reduction, the fisheries could be both sustainable and productive in the long term. This would ensure that fisheries also in the future would constitute an important source of income to the region, and traditional livelihoods would be maintained. Efforts already underway seek to address this, but will require consistent input and facilitation, and must operate in conjunction with e.g. the type of AIG schemes mentioned above.

Lastly, in order to make possible significant gains to the local population while improving environmental sustainability of livelihoods, connectivity between the Kiunga area and outside markets, whether national in the case of much of the marine produce, or international in the case of tourism and handicrafts, must be strengthened. This involves facilitating market access and promoting business linkages, as well as improving communication infrastructure, including telecommunication. The unique natural and cultural characteristics of the area will remain its greatest strength also in a "new" economy, and stand to benefit its people in the long term through higher socioeconomic development and higher environmental sustainability.



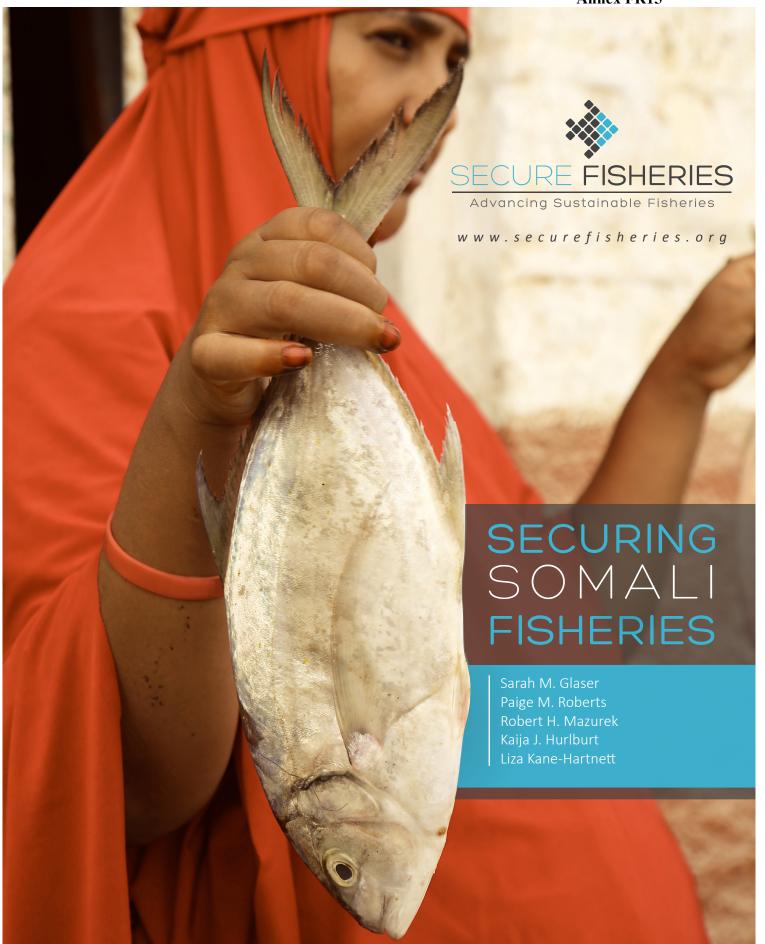


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Annex FR15
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SECURING SOMALI **FISHERIES**

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EXECUTIVE SUMMARY - ENGLISH

Somali waters have the potential to support some of the most productive fisheries in the world. Yet, the domestic fishing sector in Somalia is relatively small. Development of fisheries proceeded fruitfully during the 1970s and 1980s, but the 1991 civil war reversed this development and opened Somali waters to an influx of unregulated fishing from foreign vessels. Although Somali fisheries are poorly documented, a recent surge in interest from investors has highlighted the need to understand the state of Somali fisheries.

This report was created to close the significant gaps in knowledge of Somali fisheries, such as:

- The magnitude of foreign fishing;
- The effects of illegal foreign fishing on Somali fisheries and supporting habitat;
- The sustainability status of economically important species; and
- The economic value and supply chain potential of domestic markets.

This report promotes sustainable harvests of Somali fisheries by identifying underused resources and highlighting challenges. By creating a shared set of knowledge about the resource, it also provides a foundation for improved stakeholder partnerships, data sharing, and transparency. Finally, the report calls on the international community to prioritize the health of Somali fisheries and ensure that their fishing vessels follow Somali law in order to promote jobs, growth, and stability.

Our report shows that the biggest cause for concern is foreign illegal, unregulated, and unreported (IUU) fishing. We estimate foreign IUU vessels catch three times as many fish as the Somali artisanal fishing sector, and many of those vessels cause significant environmental damage. Our analysis suggests that foreign fishing must immediately be limited, regulated, reported, and licensed. We also find a significant number of Somali fish stocks are overfished and, if these trends continue, Somali fishers will face declining catches and profits.

Chapter 1: Introduction to Somali Marine Fisheries

In Chapter 1, we review a brief history of Somalia as it relates to its fisheries sectors. While national-level statistics are outdated, the most recent numbers available document 4,500 full-time and 5,000 part-time fishers across the region. In 1996, fisheries indirectly employed an additional 30,000 persons full-time and 60,000 part-time in occupations. Fisheries in all regions face significant challenges to development. The lack of infrastructure, especially ice, freezing, and cold storage facilities, is a major constraint on the expansion of fisheries.

After decades of limited fisheries management, several important steps have been made recently:

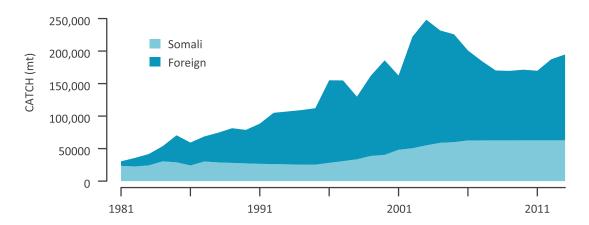
- In April 2014, Somali representatives agreed to cooperate on fisheries management through federal and regional licensing schemes.
- In May 2014, Somalia joined the Indian Ocean Tuna Commission and engaged the international community in shared management of tuna and tuna-like species.
- In June 2014, Somalia proclaimed its Exclusive Economic Zone, strengthening its legal foundation for fisheries management, especially with respect to foreign vessels in Somali waters.
- In October 2014, the parliament adopted an updated draft fisheries legislation, the Somali Fisheries Law (Law n°29), which was signed by President Hassan Sheikh Mohamud in November 2014. This legislation prioritizes sustainability, promotes cooperation between federal and regional administrations, recognizes the importance of including fishers' perspectives in fisheries management, and takes a strong stand against IUU fishing.



Chapter 2: Foreign Fishing in Somali Waters

In Chapter 2, we report the results of the first comprehensive review and measurement of foreign fishing in Somali waters. We combine published reports, interviews with experts, analysis of satellite data, and reported catch data to estimate total catch by foreign vessels. Foreign vessels caught over 132,000 metric tons of marine life in 2013, nearly three times the amount caught by Somali artisanal and subsistence fishers. Iran and Yemen have the largest fishing presence in Somali waters. Vessels from Europe and Asia also have had a significant presence in Somali waters. Many of the foreign purse seine and longline vessels crowd the outside border of the Somali Exclusive Economic Zone, while others have been granted license to fish inside the EEZ.

Estimated catch by foreign vessels and Somali vessels in Somali waters, 1981–2013.



IUU foreign fishing in Somali waters has been a problem for decades. During the 1990s, IUU fishing became an initial justification for pirate attacks on foreign fishing vessels. The sustainable development of fisheries by Somalis is made significantly more difficult while foreign IUU vessels operate with impunity. Furthermore, rampant unreported and unregulated foreign fishing, whether illegal or not, has galvanized public resentment. Foreign vessels have been accused of hiring armed guards and shooting at Somalis, spraying Somalis with hot water, destroying artisanal fishing gear, depleting fish stocks at the expense of domestic catch, and destroying coral reef habitat. Somali authorities have asked for international cooperation to fight back against illegal foreign fishing. It is imperative to reduce foreign IUU fishing in Somali waters, and now is a critical time for the international community to act.

The presence of foreign fleets also damages habitat. Bottom trawlers, vessels that drag nets along the seafloor in shallow waters, are active in Somali waters during 75% of the year. Bottom trawling wreaks havoc on marine habitat, reduces biodiversity, and diminishes fish populations long after trawling ceases. Furthermore, the number of active trawlers is higher than what we tracked, and the negative impact of trawling is much greater than we can document. As such, we recommend that bottom trawlers cease operating in Somali waters immediately, in line with Somalia's new fisheries legislation.

However, the presence of some foreign vessels could be leveraged for the benefit of Somalis. We estimate Somalis could generate between US\$4 and US\$17 million in revenues each year from licensing foreign longline and purse seine tuna fleets. Licensing revenue would be even greater if vessels from Iran and Yemen were licensed. This potential revenue represents an important opportunity for investment in the Somali fisheries sector. To facilitate the sustainable development of Somali fisheries, foreign fishing (both legal and illegal) must be limited, licensed, recorded, and regulated as soon as possible.



Chapter 3: Economic Value of Somali Domestic Fisheries

In Chapter 3, we analyze domestic value chains for fish products. The market for fish products that are landed by Somalis shows significant opportunity for growth and development, both within Somalia and for export. Somali fish catch increased dramatically from the mid-1980s to today, but markets did not concurrently diversify. We develop value chains to demonstrate the potential for market development of Somali fish products.

We estimate the total economic value of domestic fisheries, after value is added through the supply chain, to be US\$135 million per year. Substantially greater economic benefit could be obtained by the Somali fishing and seafood industries through improved value addition. Landing sites are not equipped with sufficient support services or infrastructure for off-loading, chilling, storing, and transporting fish. As a result, Somali fishers cannot leverage price premiums that accrue to processed fish. Developing small-scale processing facilities could enable fishers to add value to catches and provide a means to improve marketing opportunities.

Our conversations with Somali fishers reveal growing concern over the state of the resource, lost profits attributed to competition from foreign industrial vessels, and a lack of access to formal markets. If developed equitably, fisheries have the potential to be an important source of food and income security and, eventually, of stability.

Chapter 4: Sustainability of Fishing in Somali Waters

In Chapter 4, we assess the sustainability of fish stocks in Somali waters. We find almost half the groups of fishes we analyzed, including sharks and groupers, are currently fished at unsustainable levels. Other groups, including sardines and jacks, appear to be sustainable for the time being.

Additionally, we calculate the amount of fish that could be sustainably harvested from Somali waters, and we compare that to the amount of fish that is currently harvested from Somali waters. Our comparisons demonstrate marine top predators (e.g., tuna and sharks) are being harvested at maximum capacity and there is no room to sustainably increase catch of these fish. However, fishes such as sardines, anchovies, and some bottom fishes could sustain higher levels of catch in the future. For sustainable development to be successful, we recommend a more balanced approach to harvesting that decreases catch of top predators and increases catch of forage fishes and bottom fishes that are not currently harvested.

Ultimately, there are reasons to be optimistic about the sustainability of fisheries in Somalia. On average, Somali fisheries are more sustainable than in the rest of the world and immediate action to manage these fisheries could preserve that sustainability. However, caution is warranted. If Somali stocks continue on their current path, we estimate well over half of stocks will be fished at unsustainable levels in under a decade.

Chapter 5: Opportunities for Developing Somali Marine Fisheries

There is great potential in Somali fisheries, but there is also great risk. Run-away foreign fishing, much of it illegal, poses the greatest threat to the long-term health of the Somali fishery ecology and economy. In Chapter 5, we outline nineteen opportunities to support a sustainable foundation for Somali fisheries, for Somalis to reduce illegal fishing in their waters, and for international action to stop illegal and destructive fishing in Somali waters. Some of the most important opportunities include:

- Finalizing a mechanism for licensing foreign vessels and investing that revenue into the Somali fishery sector;
- Developing greater capacity for monitoring, control, and surveillance;
- Increasing data collection;
- Growing the domestic sector through investment in cold storage, freezers, and infrastructure;
- Developing fisheries management plans;



- Stopping foreign illegal fishing by enforcing sanctions against vessels;
- Improving data sharing by foreign navies and fishing vessels with Somali officials;
- Inspecting vessels suspected of fishing illegally in Somali waters that unload in foreign ports; and
- Supporting regional agreements to end IUU fishing.

Conclusions

Ultimately, Somali fisheries have the potential to bolster food and income security throughout the region. A more robust domestic fishery would increase jobs and wages in one of Somalia's most vulnerable employment sectors. Management of foreign fishing is important to ensure lasting benefits for Somalis. Given the decades of IUU fishing by foreign vessels within Somali waters, the international community bears a responsibility to help support sustainable fisheries through investment, regulation of its vessels, and respect for Somali law. Accordingly, investment in the Somali fisheries economy, especially infrastructure, would spill over and improve other domestic sectors, set the foundation for long-term prosperity, and improve national security.



ABBREVIATIONS

AIS Automatic Identification System

ASCLME Agulhas and Somali Current Large Marine Ecosystem Project

CMM Conservation and Management Measures
CPI Consumer Price Index (World Bank)

DG-Mare Directorate-General for Maritime Affairs and Fisheries

DWF Distant Water Fleets

DWFD Distant Water Fisheries Development

EEZ Exclusive Economic Zone

FAO Food and Agriculture Organization of the United Nations

FGS Federal Government of Somalia
FMC Fisheries Monitoring Center
FPP Fishery Production Potential
FSFA Federal Somali Fisheries Authority

FV Fishing Vessel

HMS Highly Migratory Species
ICU Islamic Courts Union
IDP Internally Displaced Person

IMO International Maritime Organization
IOTC Indian Ocean Tuna Commission

IUCN International Union for Conservation of Nature IUU Illegal, Unreported, and Unregulated fishing

LME Large Marine Ecosystem

MCS Monitoring, Control, and Surveillance
MMSI Maritime Mobile Service Identity
MSY Maximum Sustainable Yield

NECFISH North-East Coast Fishing Enterprise
NGO Non-Governmental Organization
OSY Optimum Sustainable Yield
PSMA Port State Measures Agreement
SHIFCO Somali High Seas Fishing Company

SMRSS Somali Maritime Resource and Security Strategy

TAC Total Allowable Catch

TFG Transitional Federal Government
TURF Territorial Use Rights for Fisheries

UN United Nations

UNCLOS United Nations Convention on the Law of the Sea

VMS Vessel Monitoring System

VSF-S Vétérinaires Sans Frontières Suisse

WIO Western Indian Ocean



CHAPTER 4. SUSTAINABILITY OF FISHING IN SOMALI WATERS

1. THE IMPORTANCE OF SUSTAINABLE FISHERIES

For almost two decades, fisheries scientists, marine ecologists, and conservation NGOs have been sounding the alarm about the state of global fisheries. A stagnation, and then decline, in global catch starting in the late 1980s suggested demand for fish was beginning to outstrip supply.1 In the 1950s almost 80% of all fisheries were undeveloped; today, only 3% are undeveloped.2 The number of collapsed and overexploited fisheries has grown to over half of all stocks in the world today, and most remaining stocks are fully exploited.3 Unsustainable levels of fishing have important consequences for marine ecosystems: biodiversity is reduced,⁴ fish populations decline,5 and extinctions are more likely.6 Unsustainable fisheries also negatively impact the human populations who depend on them. As the costs associated with fishing grow, coastal fishing communities, especially those in developing nations, are receiving fewer of the direct benefits of their marine resources.7

In the case of Somali fisheries, long-term sustainability is a critical goal shared by government, fishers, and coastal communities. It is embodied in the new Somali Fisheries Law through mandates of improved monitoring, ecosystem-based approaches to management, protection of threatened and endangered species, and total allowable catches based on optimum sustainable yield. But sustainability cannot be achieved through legislative tools alone. Our analysis (Chapter 2) shows foreign fleets harvest significantly more fish than Somalis do. Most of the vessels in foreign fleets are bigger, faster, and more technologically advanced than Somali vessels. Consequently, in the race to fish that ensues when resources decline, foreign vessels will have the competitive edge. Around the world, industrial distant water fishing fleets are crowding out small-scale and artisanal fishers. Small-scale fishers are some of the poorest in the world and are extremely vulnerable to changes in resource status.8 Sustainable harvest of resources is therefore a safeguard against economic shocks and loss of income for Somali fishers.

Here, we analyze the potential for fishing in Somali waters at sustainable levels and whether current fishing levels



achieve sustainability. As noted before, the analyses possible are constrained by the amount (e.g., duration and resolution) and quality of data available. Data-poor approaches to sustainability analysis have been developed in recent years and promise to advance our understanding of under-monitored fisheries. But they carry with them important caveats and cautions. To the best of our ability we offer here a baseline estimate of fishery potential and sustainability of fisheries in Somali waters. Somali fishery scientists and authorities, international actors, and NGOs should capitalize on this beginning to improve estimates and further our understanding of the health of Somali fisheries.

2. FISHERY PRODUCTION POTENTIAL IN SOMALI WATERS

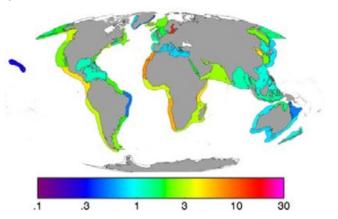
Somali waters are known for supporting high biomass of marine life (see Chapter 1 §3). The fishery production potential (FPP) of an area refers to the total biomass (in metric tons) of marine life that could be extracted on an annual basis when both economic (e.g., demand and feasibility) and ecological (e.g., food web links and sustainability) considerations are made. A recent FAO assessment⁹ of global FPP ranks Somali waters among the world's highest (Figure 4.1). The Somali Coastal Current Large Marine Ecosystem (LME),^a along the Somali

a Large Marine Ecosystems are contiguous areas of the coastal ocean that have similar physical and biological characteristics, often defined by water masses or currents and biological populations. See http://lme.edc.uri.edu



east coast, is ranked fourth in the world in FPP.^b Out of 54 ranked LMEs, only the Baltic Sea, Canary Current (African northwest coast), and Benguela Current (African southwest coast) could sustainably produce more fish per square kilometer. Likewise, the Arabian Sea LME, along the Somali north coast, is ranked eighth in the world. This makes Somali waters potentially more productive, per unit area, than some of the largest fishing regions in the world, such as the California Current LME (U.S.) or the Humboldt Current LME (Chile/Peru).

FIGURE 4.1 Example of fishery production potential (FPP) estimated for top predators (i.e., piscivores like tuna) in 53 Large Marine Ecosystems around the world. Reproduced from Rosenberg et al. 2014. Color bar is in units of tons per km².

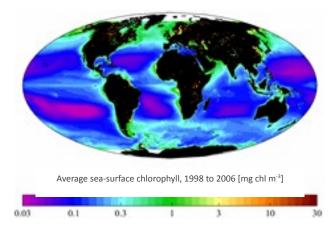


A scientifically rigorous estimate of the amount of fish that could be sustainably harvested each year from Somali waters is sorely needed. Somali Fisheries Law mandates regulation of fishing to produce optimum sustainable yield (OSY), and catch can only be allocated to foreign vessels if surplus resources are available after domestic allocation. Estimates of fishery potential can be used to understand how much fishing the ecosystem can tolerate, what levels of fishing correspond to OSY, and how much surplus resource is available to foreign vessels. A best-practices approach to estimating fishery production potential would involve robust estimates of energy in the system (annual primary productivity derived from chlorophyll estimates, see Figure 4.2), quantifying how that energy moves through the Somali marine ecosystem, and having clear estimates of the amount of fishing pressure the system experiences.

b This refers to the amount of fish that could be caught, not the amount that is currently being caught.



FIGURE 4.2 Global estimates of sea surface chlorophyll (averaged from 1998 – 2006) derived from satellites as an example of data used to estimate fishery production potential. Image from Wikipedia.



Several historical estimates of potential fish catch in Somali waters exist. However, our review of their origins leaves us hesitant about their rigor and comparability. Estimates range from 180,000 metric tons (mt) per year¹¹ to over 680,000 mt per year,¹² leaving ample room for misjudgment over the degree of fishing that can be sustainably conducted. In his 1981 thesis,13 Yassin aggregated data published in other reports with surveys conducted by the R/V Fridtjof Nansen14 to estimate an annual catch potential of 680,000 mt. In 1983, Haakonsen¹⁵ reported annual catch potential of 180,400 mt for large and small pelagic fishes, demersal fishes, sharks and rays, lobster, and shrimp. The methods and data by which this estimate was derived were not reported. In a 1999 conference paper, Hassan and Tako¹⁶ report an FAO estimate of 300,000 mt of fish catch possible per year, but they do not reference the original source (or method by which it was derived).

We mention these estimates because they have been used in the past to inform the discussion of fishery potential in Somali waters. However, in the past year a new global FPP model (introduced above) has been built. A version of the model and its results exist in Rosenberg et al. published in 2014.¹⁷ The model is undergoing regular revision, and we obtained more recent estimates of FPP directly from the authors.¹⁸

Briefly, the model divides the world into Large Marine Ecosystems¹⁹ and estimates primary production from satellite images of ocean color in each LME. Primary

production measures the amount of energy being created by photosynthesis by phytoplankton (see Figure 4.2). A food web model traces the flow of energy between prey and predators in each LME. The model measures FPP by estimating the biomass in different parts of the food web and applying constraints that account for the viability of a fishery for a given type of fish (e.g., whether it is a desired food source and whether harvest is economically practical). FPP is calculated as the amount of fish that could be sustainably harvested, assuming harvest should not exceed 20%-25% of available production. To simplify the model and data requirements, species of marine life were aggregated into categories of piscivores (animals that consume fish and are generally considered top predators, such as tuna), planktivores (animals that consume plankton and are consumed by predators, such as sardines), and benthivores (animals that consume bottom-dwelling organisms, such as flatfishes). Please see the original FAO document for full methodological details.20

We were provided with the most recent model estimates of FPP for piscivores, planktivores, and benthivores for the Somali Current LME and Arabian Sea LME (Table 4.1 and Figure 4.1). The LMEs are much larger than the area defined by the Somali Exclusive Economic Zone (EEZ), so to estimate FPP of the Somali EEZ, we calculated the overlap between the two LMEs and the EEZ (see Appendix 6). Northern Somali waters encompass 5.3% of the Arabian Sea LME, while eastern and southern Somali waters encompass 55.4% of the Somali Current LME. The FPP estimated for the full LME area was then reduced (weighted) by the percent of areal overlap (Table 4.1, area-weighted FPP columns). Finally, we combined FPP in the two LMEs that overlapped Somali waters. Fish catch in Somali waters by the foreign fleets (Chapter 2) and fish catch from the Somali domestic fleet (Chapter 3) were

aggregated into categories of piscivores, planktivores, or benthivores (Figure 4.3) and compared to the total FPP in Somali waters (Table 4.1).

Somali waters have a FPP of 835,000 mt per year (Table 4.1). By comparison, we estimate only 194,000 mt of fish were caught in Somali waters in 2013. However, the harvest of these fish is severely unbalanced with respect to categories of fish. The FAO model estimates Somali waters can sustainably produce 136,000 mt of piscivores each year. This category includes tuna, billfishes, sharks, and predatory coastal fishes such as snappers. In 2013, we estimate 139,000 mt of piscivores were harvested from Somali waters. Consequently, this category of fishes appears to be fished at maximum capacity. We conclude fishing fleets in Somali waters cannot increase the amount of piscivores caught without implicating the sustainability of these commercially valuable fisheries.

On the other hand, planktivores (such as sardines) and benthivores (such as flatfishes) are fished far less than their estimated FPP (Table 4.1); 335,000 mt of planktivores could be harvested from Somali waters each year but only 26,000 mt were harvested in 2013. Likewise, 364,000 mt of benthivores could be harvested from Somali waters each year but only 28,000 mt were harvested. In order to protect the long-term sustainability of Somali's fisheries, development of fisheries for planktivores and benthivores may be most profitable and ecologically sound (but see §3 below in which specific families of benthivores, such as emperors, are classified as unsustainable).

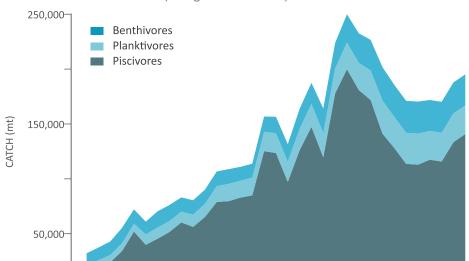
It is extremely important to note that the total FPP estimated for Somali waters, 835,000 mt per year, is only achievable if significant increases in catch are made for benthivores and planktivores. A significant amount of the planktivore biomass is composed of small mesopelagic

TABLE 4.1 Fishery production potential (FPP) compared to current catch in Somali waters. Catch is from foreign and domestic fishing combined. The area-weighted FPP columns give estimates of FPP in the LMEs that overlap Somali waters as defined by the Somali EEZ. All units are mt.

Fishery Category	FPP in Somali LME	FPP in Arabian Sea LME	Area- Weighted FPP, Somali LME	Area- Weighted FPP, Arabian Sea LME	Total FPP in Somali Waters	Total Catch in Somali Waters (2013)
Piscivores	215,000	323,000	119,000	17,000	136,000	139,000
Planktivores	542,000	646,000	301,000	34,000	335,000	26,000
Benthivores	597,000	633,000	331,000	33,000	364,000	28,000
Total	1,354,000	1,603,000	751,000	84,000	835,000	194,000



1981



1991

2001

FIGURE 4.3 Fisheries catch (foreign and domestic) in Somali waters.

fishes (myctophids or lanternfishes) that are not currently harvested at meaningful scales. Myctophids are not likely to be sold for direct human consumption, but they could contribute to fishmeal production in the future. The large imbalance in harvest between piscivores on the one hand and planktivores and benthivores on the other hand is illustrative of a global pattern: top predators have been highly desired for human consumption for many decades and their harvest levels are likely at (or in excess of) levels that are sustainable. For humans to increase fish catch in a sustainable manner, a more balanced approach to harvesting should increase catch of benthivores and planktivores. In this regard, Somali waters are no different than those in the rest of the world's oceans.

SUSTAINABILITY OF FISHERIES AT CURRENT LEVELS OF FISHING **EFFORT**

The FPP analysis compares potential to actual harvest at highly aggregated taxonomic scales. But for a fuller understanding of the status of Somali fish stocks, sustainability analysis should be done for more useful groupings. Fisheries management plans must account for the health of different species of fishes because they may react very differently to changing environments or fishing practices. When comprehensive fisheries and biological data are available, the sustainability of fished

stocks can be assessed by dataintensive methods such as formal stock assessments. However. Somalia, like the vast majority of fished stocks around the world. lacks sufficient data for such assessment. Instead, we used methods³⁰ developed specifically for data-poor fisheries to classify the sustainability of fish stocks in Somalia at current levels of catch (foreign plus domestic).

We classified sustainability based on the ratio of current levels of fish biomass to the biomass needed to produce maximum sustainable yield, or MSY (B/B_{MSY}). This ratio is a common metric of sustainability used by the Indian Ocean Tuna Commission (IOTC), among others. If the ratio is greater than

1.0, the biomass of a fish stock is higher than that needed to produce MSY for the fishery. Theoretically, then, the fishery could support a higher level of fishing. If the ratio is less than 1.0, the biomass of a fish stock is below that needed to produce MSY for the fishery, and fishing levels should be reduced to improve sustainability.

2011

Biomass is difficult to measure even in well-studied systems. In systems such as Somalia's, which lack regular scientific surveys of marine resources, it is nearly impossible. Costello³¹ and colleagues developed an approach for estimating B/B_{MSY} when only catch and basic biological information are available. Using information from data-rich fish stocks from around the world, they built a statistical model^c that related B/B_{MSV} to various fishery metrics such as how long the fishery has existed, whether catch has peaked, and the length of the fish in question. They then applied that model to over 1,700 stocks of fishes that had never been assessed before. Their analysis did not explore stocks in Somali waters, so we applied the model they developed to the catch data we have reconstructed for Somali waters.

We limited our analysis to catch from those species groups that (a) had sufficient data for analysis and (b)



A panel regression model built from FAO catch data and validated against full stock assessments. The coefficients thereby derived were then applied to 1,793 unassessed stocks.

Box 4.1: The Potential for Investment in Somali Fisheries

As the political and security situations in Somalia stabilize, Somali and foreign businesspeople are seeking opportunities to invest. The Somali energy, telecommunications, and agriculture sectors are growing, and private sector investment promises to improve supply chains, create jobs, build civil society, increase civic participation, reduce poverty, and promote economic growth. Additionally, there is potential for Somalis to earn millions of dollars each year from licensing foreign fishing vessels, and this revenue could be used to expand the fisheries sector. Somalia's small-scale fisheries sector would benefit greatly from investment in infrastructure and services, but that investment must be targeted wisely to achieve sustainability. In the course of our research, the following sectors presented some of the most promising opportunities for investors and the Somali fishing sector:

- Cold storage—One of the greatest challenges to expanding fisheries in Somalia is the lack of infrastructure, especially a well-developed cold chain. Cold storage at every point along the boat-to-market continuum is crucial to maintaining the quality of fish and thereby commanding high prices, especially in export markets. Progress in the cold chain is being made through the construction of freezers made from cargo containers.²¹ Increased ice-making facilities, cold storage, and freezer transport would greatly increase the value and marketability of Somali catch. In particular, a variety of freezing technologies are needed to accommodate different markets: while ice is useful for fish that will be sold domestically in short time frames, deep and flash freezers are needed to preserve fish for long time frames in the export market.
- Fishing boats and technology—Somali fishers are limited by the small size of their boats and lack of access to fish-finding technologies. Larger boats, navigational equipment (e.g., GPS and navigation charts), and fish-finding sonar systems would increase the ability of Somali fishers to compete with industrial and foreign vessels.
- Sanitary processing facilities—Somali fish products do not always adhere to the food safety and sanitary import laws of most countries,22 and this limits the markets to which Somalis can send fish products. After preventing spoilage through greater cold storage capacity, investment in state-of-the-art sanitary processing facilities and training in international sanitation standards would open new markets for Somali fish products. Such facilities could be built in regional hubs and serve catch from a variety of smaller supply locations.
- Small-scale tuna fisheries—Most Somali vessels catch fish using gillnets; this precludes catching large,

- highly migratory (and highly profitable) tuna such as yellowfin, and gillnets create unwanted bycatch. We believe there is great potential in an artisanal poleand-line yellowfin tuna fishery. The Maldives have leveraged their artisanal tuna fishing practices onto a larger scale, and they market their products accordingly: pole-and-line caught tuna from the Maldives is highly desired and commands above-market prices because it is certified sustainable by the Marine Stewardship Council.23 Somalia has similar potential. Targeted investment into pole-and-line gear or longlines equipped with bycatch prevention measures could create a niche market for Somali tuna. Our analysis (§2) shows catch of highly migratory tuna in Somali waters is approaching the limits of sustainability, so increases in domestic harvest must be reconciled with the large amounts of tuna caught by foreign vessels. Somalis would earn greater income from a profitable artisanal tuna fishery than from licensing foreign vessels to land the same fish, but development of such a fishery will take time. However, there may be even greater potential for catch of the coastal species of tuna (e.g., frigate tuna, bullet tuna, or kawakawa). We caution that the IOTC does not yet perform sustainability analyses for these species, but Somali-led data collection initiatives could help fill this gap.
- Fishmeal—In Somalia, there is first-mover opportunity to develop fisheries for forage fishes and process those fish into fishmeal, a growing product on the international market for animal and aquaculture feed.^{24, 25} Additionally, fishmeal could provide an affordable, organic, and local source of fertilizer for Somali agriculture. Our sustainability analysis shows that forage fishes (planktivores), including sardines and anchovies, are underexploited in Somali waters. To develop this opportunity, investment is needed in both the fishery itself and in building fishmeal pro-



Sustainability

Box 4.1: CONT'D

cessing plants. Forage fishes are subject to large population fluctuations caused by climate and natural cycles,26 so strong fisheries management plans should first be adopted. Energy and water use considerations for fishmeal plants also must be assessed. If established wisely, sustainable harvest of forage fishes for fishmeal could produce jobs in fishing areas and away

• Shellfish mariculture—Aquaculture is the fastest-growing food production sector in the world, but land-based systems require high water inputs. Mariculture, aquaculture that occurs in the ocean, may offer an important alternative in water-strapped Somalia.²⁷ Coastal culturing of mussels, in which mussels are grown on rafts, ropes, or poles and harvested by hand, is one of the most sustainable forms of aquaculture in the world.²⁸ Mussels are extremely nutritious, and mussel farms have been highly profitable in suitable locations. Although suitability studies and environmental impact assessments are needed for Somali waters, mussel mariculture may be a creative and lucrative opportunity.²⁹

were not highly migratory species (HMS). HMS stocks undergo more rigorous sustainability analysis by the IOTC, and we defer to and report their results for HMS below.

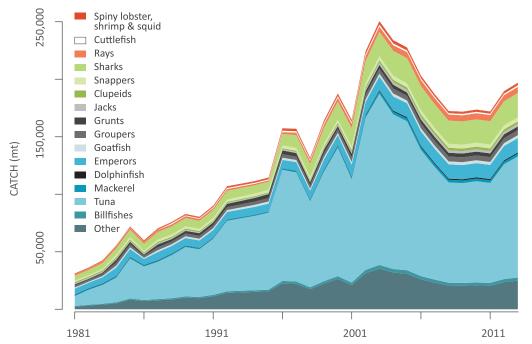
We used combined foreign and domestic catch estimates for dolphinfish, emperors, goatfish, jacks, clupeids, snappers, sharks, rays, groupers, and grunts (Figure 4.4). Uncertainty in catch reconstructions at the species level and limitations with the sustainability model precluded analysis of individual species. Maximum length of each fish group (calculated as an average across species in that group) was included as a biological parameter in the model. Although we have catch reconstructions for squid, shrimp, spiny lobster, and cuttlefish in Figure 4.4, the sustainability model produced by Costello et al. did not include these groups. See Appendix 6 for further methodological details.

We find 8 of the 17 fish groups we analyzed are currently fished at unsustainable levels (Figure 4.5). These include

> swordfish, striped marlin, emperors (including the commercially important spangled emperor, Lethrinus nebulosus), goatfish, snappers, sharks, groupers, and grunts (including the commercially important painted sweetlips, Diagramma pictum).

> We urge caution when interpreting these results. First, the analysis was done on categories of catch that range from species (e.g., yellowfin tuna) to groups of families sharks). Results (e.g., found for aggregated categories do translate to the species that make up that group,

FIGURE 4.4 Fisheries catch (foreign and domestic) in Somali waters by species group.





SUSTAINABLE UNSUSTAINABLE DOI PHINEISH STRIPED MARLIN YELLOWFIN TUN

FIGURE 4.5 Sustainability of commercially-fished stocks in Somali waters.

and variation between species will occur. Second, for the non-HMS species, the analysis was based on catch reconstructions. The methodology used for these reconstructions (see Chapters 2 and 3) creates patterns in the data that are different from those that would exist in real observations of catch (i.e., higher autocorrelation). However, the creators of the sustainability model found catch underreporting and misreporting did not affect results. Third, our classification scheme creates a clear line $(B/B_{MSV} = 1.0)$ above which a group was classified as sustainable and below which it was classified as unsustainable. Some categories have B/B_{MSY} values near 1.0 and could plausibly be classified another way if data were slightly different. Likewise, some categories had B/B_{MSV} much greater than 1.0 suggesting high levels of sustainability, while others had B/B_{MSY} much lower than 1.0, suggesting immediate conservation measures are needed. Our catch estimates are not robust enough for additional interpretation.

4. CONCLUSIONS

BLUE MARLIN

There are reasons to be optimistic about sustainability of fisheries in Somalia. On average, fisheries in Somalia are more sustainable than in the rest of the world. In two

analyses, 63%⁴³ and 64% of global stocks were found to be unsustainable (with B/B_{MSY} below 1.0). By comparison, less than half of the categories we analyzed are unsustainable in Somali waters. None of the Somali fisheries are collapsed, while worldwide 24% are collapsed. Some of the most lucrative species, particularly yellowfin and skipjack tuna, appear to be healthy. And the species most likely to be turned into fishmeal (clupeids) also appear sustainable at current levels.

However, caution is warranted. On average, global fish stocks had comparable levels of sustainability in 1978 (66% sustainable, 44% unsustainable), but a mere 13 years later sustainability had declined such that 64% of stocks were unsustainable, a level that persists 25 years later. Somali fish stocks may have an advantage over global stocks because the history of industrial-level fishing in its waters began much later and increased more slowly. If Somali stocks follow a path similar to that taken by global stocks, we estimate more than half of stocks will be unsustainable in under a decade.

Fisheries have the potential to yield significant income, nutrition, and employment for Somalis. The strides made recently to build a foundation for management and ownership of fisheries by Somalis is a critical step towards greater sustainability in the future.



Box 4.2: Conservation of Overlooked Species

Many species with vulnerable, threatened, or endangered conservation status live in Somali waters, including whale sharks, sea turtles, cetaceans, seabirds, and sea cucumbers. These groups may be targeted or captured as bycatch in the gillnet, trawl, longline, and purse seine fisheries. Proper protection and management is hindered by a severe lack of data. Catch of these species in the Indian Ocean is frequently underreported because it is not required by individual nations, and because vessels fear the consequences of reporting illegal capture of threatened species where such laws exist.³² The high bycatch rates associated with gillnet vessels, deployed by the two foreign fleets with the largest presence in Somali waters (Iran and Yemen), is cause for concern.

Whale Sharks

Whale sharks (*Rhincodon typus*) range throughout the Indian Ocean, and tagging experiments confirm their presence in Somali waters.³³ Targeted fisheries for this species, which is listed as Vulnerable by the International Union for Conservation of Nature,³⁴ have been banned in many Indian Ocean countries, and whale sharks have been protected to promote ecotourism in the Seychelles. Unfortunately, these massive filter-feeding sharks are subject to accidental mortality in gillnet, purse seine, and driftnet fisheries.³⁵

Sea Turtles

Of the seven species of sea turtles worldwide, five live in Somali waters, all of which are protected by various international treaties.³⁶ The green turtle (*Chelonia mydas*) and hawksbill turtle (*Eretmochelys imbricata*) range throughout the Western Indian Ocean and nest on northern Somali beaches.³⁷ Sea turtles are extremely vulnerable to entanglement in gill nets,³⁸ so they are often captured incidentally by foreign fishers and Somali fishers who keep them to sell their meat. In our survey of Somali fishers (Appendix 1), 22% of respondents reported that they had caught turtles and that they fetched between US \$0.50 -\$15.00 per kg. These high prices incentivize fishers to keep accidentally caught turtles rather than release them.

Seabirds

Seventeen species of seabirds live in Somalia. Worldwide, seabird populations are on the decline.³⁹ Seabirds are primarily surface feeders, scanning the waves for prey in the top few meters of water. These eating habits mean they are easily enticed by baited longlines⁴⁰ or the dead fish in gillnets.⁴¹ Both gears pose threats to birds which can drown if hooked on a line or entangled in a net. Unfortunately, the number of seabirds accidentally caught in the Indian Ocean is entirely unknown. We believe that with the heavy use of gillnets and longlines in Somali waters, unreported seabird mortality in this region is likely high.

Sea Cucumbers

Little is known about the size of the sea cucumber fishery or the status of their populations in Somali waters. According to our survey of Somali fishers, processors, and exporters, sea cucumbers are captured by Somali fishers for export and they fetch a high price compared to most fish species: between US \$60 and \$92 per kg, depending on the market. Worldwide, few sea cucumber management plans exist and those that do are undermined by a lack of knowledge.⁴² Given their high value and lack of management, sea cucumbers are poised to be overfished in Somali waters.

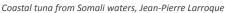
The recently enacted Somali Fisheries Law calls for the protection of "endangered marine animals," prohibits fishing for endangered animals, and mandates release of accidentally caught endangered marine animals. Additionally, fishers are obligated to report quantities and types of bycatch.* Upon joining the IOTC, Somalia began the process of coming into compliance with Conservation and Management Measures (CMMs). CMMs are binding resolutions with which IOTC Member nations comply, and they provide a framework for reducing bycatch and



Box 4.2: CONT'D

protecting threatened and endangered species. CMMs for the protection of whale sharks, turtles, and seabirds exist, but they do not exist for sea cucumbers. These are excellent first steps toward conserving threatened species; however fishers, both local and foreign, need to be better informed of these regulations and their consequences, and enforcement of the law is crucial for the protection of these sensitive species. Over the next few decades, as stability in Somalia grows, the conservation of these species today is critical to ecosystem function and societal development (e.g., ecotourism) in the future.

*Article 25 of the Somali Fisheries Law





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Annex FR16

International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing, *UN FAO*, 2001 (Extracts)



INTERNATIONAL PLAN OF ACTION TO PREVENT, DETER AND ELIMINATE ILLEGAL, UNREPORTED AND UNREGULATED FISHING



Annex FR16

Photo credit: Mr Austin Jones, Director of the Surveillance Operations Coordinating Unit, Banjul, The Gambia

INTERNATIONAL PLAN OF ACTION TO PREVENT, DETER AND ELIMINATE ILLEGAL, UNREPORTED AND UNREGULATED FISHING

Reprinted 2002, 2004, 2006, 2011, 2016, 2017

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PREPARATION OF THIS DOCUMENT

This document contains the text of the International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU).

The **IPOA-IUU** was developed as a voluntary instrument, within the framework of the Code of Conduct for Responsible Fisheries, in response to a call from the Twenty-third Session of the Committee on Fisheries (COFI). A draft text for an IPOA-IUU was elaborated at an Expert Consultation in Sydney, Australia, in May 2000. This document formed the basis for negotiations at Technical Consultations that were held at FAO Headquarters, Rome, in October 2000 and February 2001. The IPOA-IUU was adopted by consensus at the Twenty-fourth Session of COFI on 2 March 2001 and endorsed by the Hundred and Twentieth Session of the FAO Council on 23 June 2001.

The Governments of Australia, Canada and the European Commission contributed financially to the preparatory activities leading to the development of the IPOA-IUU.

FAO.

International Plan of Action to prevent, deter and eliminate illegal, unreported and unregulated fishing. Rome, FAO. 2001. 24p.

ABSTRACT

The **IPOA-IUU** is a voluntary instrument that applies to all States and entities and to all fishers. Following the IPOA's introduction, the nature and scope of IUU fishing is addressed. This is followed by the IPOA's objective and principles and the implementation of measures to prevent, deter and eliminate IUU fishing. These measures focus on all State responsibilities, flag State responsibilities, coastal State measures, port State measures, internationally agreed market-related measures, research and regional fisheries management organizations. Special requirements of developing countries are then considered, followed by reporting requirements and the role of FAO.

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I. INTRODUCTION

- 1. In the context of the Code of Conduct for Responsible Fisheries and its overall objective of sustainable fisheries, the issue of illegal, unreported and unregulated (IUU) fishing in world fisheries is of serious and increasing concern. IUU fishing undermines efforts to conserve and manage fish stocks in all capture fisheries. When confronted with IUU fishing, national and regional fisheries management organizations can fail to achieve management goals. This situation leads to the loss of both short and long-term social and economic opportunities and to negative effects on food security and environmental protection. IUU fishing can lead to the collapse of a fishery or seriously impair efforts to rebuild stocks that have already been depleted. Existing international instruments addressing IUU fishing have not been effective due to a lack of political will, priority, capacity and resources to ratify or accede to and implement them.
- The Twenty-third Session of the FAO Committee on Fisheries 2. (COFI) in February 1999 addressed the need to prevent, deter and eliminate IUU fishing. The Committee was concerned about information presented indicating increases in IUU fishing, including fishing vessels flying "flags of convenience". Shortly afterwards, an FAO Ministerial Meeting on Fisheries in March 1999 declared that, without prejudice to the rights and obligations of States under international law, FAO "will develop a global plan of action to deal effectively with all forms of illegal, unregulated and unreported fishing including fishing vessels flying "flags of convenience" through coordinated efforts by States, FAO, relevant regional fisheries management bodies and other relevant international agencies such as the International Maritime Organization (IMO), as provided in Article IV of the Code of Conduct. The Government of Australia, in cooperation with FAO, organized an Expert Consultation on Illegal, Unreported and Unregulated Fishing in Sydney, Australia, from 15 to 19 May 2000. Subsequently, an FAO Technical Consultation on Illegal, Unreported and Unregulated Fishing was held in Rome from 2 to 6 October 2000 and a further Technical Consultation was held in Rome from 22 to 23 February 2001. The draft International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing was adopted by the Consultation on 23 February 2001 with a request that the report be submitted to the Twenty-fourth Session of COFI for consideration and eventual adoption. COFI approved the International Plan of Action, by consensus, on 2 March 2001. In doing so, the Committee urged all Members to take the necessary steps to effectively implement the International Plan of Action.

The IPOA-IUU is a voluntary instrument that applies to all States and entities and to all fishers. Following the IPOA's introduction, the nature and scope of IUU fishing is addressed. This is followed by the IPOA's objective and principles and the implementation of measures to prevent, deter and eliminate IUU fishing. These measures focus on all State responsibilities, flag State responsibilities, coastal State measures, port State measures, internationally agreed market-related measures, research and regional fisheries management organizations. Special requirements of developing countries are then considered, followed by reporting requirements and the role of FAO.



Annex FR17

Oddenyo R M *et al.*, Kenyan sharks baseline assessment report for the national plan of action for the conservation and management of sharks, *Kenya Fisheries Service*, 2018 (Extracts)

KENYA SHARKS BASELINE ASSESSMENT REPORT FOR THE NATIONAL PLAN OF ACTION FOR THE CONSERVATION AND MANAGEMENT OF SHARKS

Oddenyo, R. M., Mueni, E., Kiilu, B., Wambiji, N., Abunge, C., Kodia, M. A., Obota, C., Musembi, P., Muthiga, N., Bernard, J. and Mwasi, L. (2018) Kenyan shark baseline assessment report for the national plan of action for the conservation and management of sharks. Kenya Fisheries Service.

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Table 3. Growth parameters of sharks landed at Kipini following Froese and Binholan (2000) empirical equations. (L_{max}, maximum observed length; L_∞asymptotic length; L_m, mean length at first maturity; L_{opt}, length at maximum possible yield per recruit and < L_{opt}, proportion less than length at maximum possible yield per recruit) Source: Oddenyo, 2017.

SPECIES	L _{max} (cm)	L∞ (S.E. range) (cm)	Lmfemale (S.E. range)(cm)	Lmmale (S.E. range) (cm)	Lopt (S.E. range) (cm)	< L _{opt} (%)
Sphyrna lewini (Scalloped hammerhead shark)	254	257.4 (217.1-305.2)	146.7 (110.6-194)	111 (79.2-155.9)	172.9 (146.2-204.6)	98
Carcharhinus amblyrhynchos (Grey reef shark)	133	136.2 (114.8-161.5)	80.3 (60.6-106.3)	63 (44.9-88.4)	89.1 (75.3-105.4)	46
Carcharhinus falciformis (Silky shark)	132.5	135.7 (114.4-160.9)	80 (60.4-106)	62.8 (44.8-88.1)	88.7 (75-105)	0
Carcharhinus melanopterus (Blacktip reef shark)	127.5	130.6 (110.2-154.9)	77.2 (58.3-102.2)	60.7 (43.3-85.1)	85.5 (72.1-100.9)	95

3.2 Biology of sharks

3.2.1 Feeding Ecology

The generally high percentage indices of relative importance (%IRI) for fishes in the diet of species are indicative of the highly piscivorous nature of sharks (Oddenyo, 2017; Daly *et al.*, 2013) (Fig. 15). The large contribution of crustaceans in the diets of the grey reef shark and the silky shark suggest that teleost fishes may be supplemented by invertebrates as prey in some species in the Malindi-Ungwana bay area (Oddenyo, 2017).

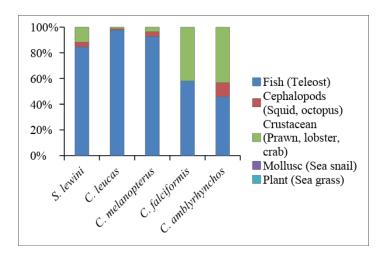


Figure 15. Percentage Index of Relative Importance of prey items consumed by sharks caught on the Kenyan Coast. Source: Oddenyo, 2017

The scalloped hammerhead and blacktip reef and bull sharks have a narrow niche breath suggestive of specialized feeding strategies adopted by these species. Significant interspecies overlaps in diet existed between the scalloped hammerhead, bull, grey reef, copper and blacktip reef sharks in the Malindi-Ungwana bay area indicating likely high competition for food resources (Oddenyo, 2017). Narrow niche breadths and diet overlaps may restrict growth rates if food items become scarce in the environment or if climate induced variability in abundance occurs (Oddenyo, 2017). However, the generalist species; the grey reef shark and the silky shark may suffer less from prey variations in the environment.

Trophic levels (TL) of sharks landed ranged from 3.90-4.238 indicating them as apex predators with the bull shark registering the highest trophic value of 4.238 and the silky shark the lowest at a value of 3.90 (Oddenyo, 2017).

3.2.2 Exploitation rates, mortality rates, length frequencies, size at maturity, breeding, growth rates, CPUE, MSY

a. Growth, mortality, exploitation rates and recruitment patterns of sharks

Kiilu et al. (2019) reported in *S. lewini* a total mortality, Z, of 1.69 yr⁻¹ which is high compared to 0.56 yr⁻¹ mortality rate observed by Liu and Chen (1999) for the species in

Northwestern Pacific. The high total mortality of *S. lewini* in Kenya is likely related to the juvenile composition of the specimens in the landings that could eventually lead to recruitment overfishing and raise the fishing mortality. *S. lewini* have been reported to be exploited beyond optimum levels (E= 0.6), indicating that increasing fishing pressure on its fishery is not sustainable for the species in the long run (Kiilu et al., 2019). The exploitation rate of *C. limbatus*, *C. melanopterus*, *C. amblyrhynchos* and *C. leucas* seem to be below optimum levels at E< 0.5 (Kiilu et al., 2019). The juveniles are vulnerable to the gill nets and beach sein nets of artisanal fishermen who fish close to the shore in the estuaries and bays, and this may lead to the danger of recruitment overfishing (sensu Pauly *et al.*, 1998) and stock collapse (Kiilu, 2016).

b. Shark fin-body weight relationships and ratios

Studies of The fin weight-bodyweight ratio for *S. lewini and C. limbatus didtributed across the Kenyan waters was estimated* at 7.4% (n= 479) and at 5.7% (n=280)which is slightly higher than the universally used threshold ratio of 5%. This indicates that the ratio may vary between species (Kiilu, 2016). The fin-weight to body-weight linear relationships reported for *S. lewini* and *C. limbatus* suggest that fin-weight (a commercial product) is a good predictor of body weight in the two species (Kiilu, 2016) and hence useful in compliance aspects.

3.3 Sharks in Marine Protected Areas

Marine protected Areas have been established in Kenya to protect and conserve marine and coastal biodiversity and managed by Kenya Wildlife Service (KWS) There are four notake marine national park that are protected from any form of extractive activities. There are also six national reserve mostly around the parks that allow traditional fishing activities and act as a buffer zone for the parks. No-take MPAs in Kenya have been acknowledged as successful in restoring fish biomass and biodiversity and have been cited as the most effective in the region (McClanahan et al, 2007). However, reserve have run short of their objectives with high exploitation rate and use of destructive and illegal gears experienced and almost with no difference with fished areas (Samoilys and Obura, 2011).

In recent years, marine conservation has moved to a more collaborative management approach through adopting Locally Managed Marine Areas (LMMA) mainly for fisheries and other marine resource management (Rocliffe et al. 2014). In the last decade 24 LMMAs have been established in the country with varying levels of protection (McClanahan et al, 2016; Kawaka et al, 2017).

There is limited information available on sharks in marine protected areas in Kenya. Elasmobranch assessment has been carried out in Watamu Marine National Park and Reserve, the oldest protected area in the country. Thirteen species of elasmobranchs representing 8 families were recorded from Underwater Visual Census (UVC) and Baited Remote Underwater Videos (BRUVs) including juveniles of three of them (Table 4). The survey also observed five of these species in fisheries catches around the reserve as bycatch. Anecdotal information also reported sightings of tiger shark (Galeocerdo cuvier) around the area specifically by deep sea recreational fishers (Musembi et al, 2017).

Table 4. Shark species identified in the Watamu Marine National Park.

Family	Species	IUCN Redlist		
-	_	category		
Sharks				
Carcharhinidae	Carcharhinus melanopterus	Near Threatened		
Carcharhinidae	Triaenodon obesus	Near Threatened		
Rhincodontidae	Rhincodon typhus	Vulnerable		
Rays				
Myliobatidae	Aetobatus narinari	Near Threatened		
Dasyatidae	Himantura uarnak	Vulnerable		
Dasyatidae	Neotrygon kuhlii	Data Deficient		
Dasyatidae	Pastinachus sephen	Data Deficient		
Dasyatidae	Taeniura lymma	Near Threatened		
Torpedinidae	Torpedo sinuspersici	Data Deficient		
Mobulidae	Mobula Kuhlii	Data Deficient		
Mobulidae	Manta alfredi	Vulnerable		
Guitarfishes				
Rhinidae	Rhina ancylostoma	Vulnerable		
Glaucostegidae	Glaucostegus halavi*	Vulnerable		

^{*}An unknown guitarfish is thought to be *Glaucostegus halavi* (Melita Samoilys and Rima Jabado), although the species is only known from the Red Sea, Persian gulf and India.

4.0 SHARK TRADE AND MARKETS

4.1 Global shark catch and markets

The global values of shark landings from the FAO Fisheries Commodities database (FAO, 2010) rose from around US\$400 million in 1990 to over US\$1 billion in 2000, declining to around US\$800 million in 2006. Because of the low economic value of sharks and rays, few resources have been put into the collection of fisheries landings data (FAO, 2010).

4.2 Domestic markets for shark products

The Kenyan and Tanzanian markets for shark meat are substantial and Kenya imports shark meat from neighbouring countries (Barnett, 1996). Important transhipment ports for dried shark fins include Kenya and South Africa in Africa although the UAE and Yemen also appear to be important transhipment hubs (McCoy and Ishihara, 1999).

4.2.1 Trends in export and imports of shark products

Shark fin exports in Kenya between the years 1990 to 1995 indicated a steady decline from 10 mt in 1990 to 4.3 mt in 1995 (Fig. 16) (Kenya Fisheries Service data). The total weight of shark fin exported between 2006 and 2015 fluctuated with a high 31.2 mt in 2008 to a low of 5.6 mt in 2012. There has been a gradual increase in shark fin exports from 2012 to 2015 (Fig. 16) (Kenya Fisheries Service data).

The value of shark fin in terms of KES/Kg showed a rise from KES.187/Kg in 1987 to KES. 824/Kg in 1992 (Kenya Fisheries Service data). There was also a rise in value between 2006 to 2015 with the lowest registered export value of KES.31.9/Kg in 2008 to the highest most recent value of KES.721.6/Kg registered in the year 2015 (Fig. 16) (Kenya Fisheries Service data).

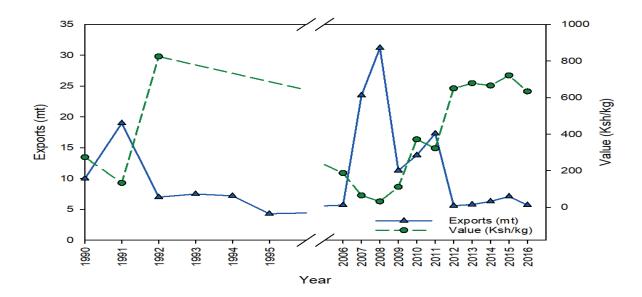
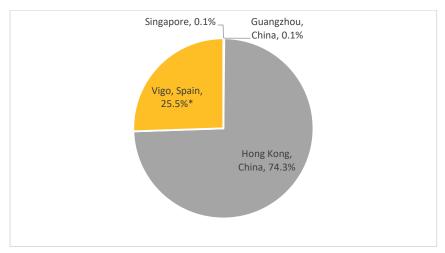


Figure 16. Shark fin exports in metric tons and value in KES/Kg between 1987-1995 and 2006-2015. Source: KeFS

4.3 Markets for other shark products

4.3.1 Shark fins

For the period between 2006 and 2015 the largest importer of shark fins/tails from Kenya was Hong Kong, China with a total of 53.9 mt (74.3%) (Kenya Fisheries Service data). This was followed by, Spain at 18.5 mt (25.5%), all of which were frozen. Singapore and China registered minimal imports of shark fin from Kenya at 54 Kgs (0.1%) and 60 Kgs (0.1%) respectively (Fig. 17). Shark fin exports to China and Singapore were dried as a means of preservation (Kenya Fisheries Service data).



*Frozen shark fins/tails were multiplied with a correction factor of 0.25 according to Clarke (2004). Source: KeFS.

Figure 17. Proportions of shark fin/tail biomass exported to various destinations from 2006-2015 from Kenya. Source: KeFS

Markets for shark meat, cartilage, skin, liver oil and fins exist in Africa and the Middle East (Barnett, 1996). Dried and salted shark meat is common as it provides a convenient form in which to transport the product in areas where shelf-life would otherwise be limited (Vannuccini, 1999).

4.4 By-products associated with directed or target shark fisheries

By-products from sharks include carcasses, fins, liver, skin, cartilage and jaws. Carcases are used as a source of protein whilst fins are majorly traded in international market for fin soup.

Shark liver in the artisanal fisheries to coat boat hulls to prevent biofouling. Shark skin has been used as a material in making wallets and bags. Cartilage obtained from sharks has been used in the development of glue. On the other hand, shark jaws are mainly collected as souvenirs by local and international tourists. Despite the anecdotal knowledge on the use of various shark by-products, little is known about their value chain and socioeconomic significance in the country.

4.5 Shark fishery value chain

Sharks caught by artisanal fishers in Kenya are sold in the local markets through a variety of market chains. These include fishers selling directly to consumers; fishers to traders and middlemen; and fishers to retailers. Sharks are either sold fresh, deep fried or salted and sun dried.

4.6 Tourism

Sharks also play a role in ecotourism and recreation globally in the form of sports angling, or game fishing (Clarke *et al.*, 2005). Whale sharks and manta rays form part of the dive tourism in some areas like Watamu, although they are sighted seasonally especially from November to January. Anecdotal information from dive operators in Watamu suggest a decline in shark sightings in the last two decades. Whale sharks and manta ray sightings have reduced in the past several years (Musembi *et al*, 2017).

4.7 Socioeconomic significance of sharks and rays to coastal communities in Kenya Information on the socio-economic significance of sharks and rays to the local livelihoods is inadequate.

However, a recent first-time study conducted by KMFRI under the BYCAM project provides some baseline findings on the socio-economic importance of sharks and rays along the Kenya coast. The project study sites included Kiunga, Kizingitini, Mashamasha, Kitau, Kiwayu, Kipini, Mareroni, Bamburi, Gazi, Mwaepe, Mkunguni, Shimoni and Vanga. Preliminary results indicate that sharks and rays comprise various proportions of catch in weight at different landings sites with the largest proportions caught at Mkunguni (~70%) followed by Kaleloni (~40%) (BYCAM, unpublished data). Lower proportions of catch were reported for Kiwayu, Kizingitini, Mashamasha, Mareroni and Kitau sites ranging between 10-30% of the catch in terms of weight (Fig. 18a) (BYCAM, unpublished data).

Respondents in Shimoni were the only ones who mentioned rays to be part of their catch contributing to 30% of their total catch in kilogrammes (BYCAM, unpublished data) (Fig.18b).

Figure 18. Proportions in kilograms of the total catch at selected landing sites of a) sharks and b) rays. Source: BYCAM, unpublished data. (To be updated)

4.7.1 Livelihoods

Fishing has been reported as the main source of income for most coastal communities contributing to > 80% of their household income. In Kiunga, 100% of income was from fishing (BYCAM, unpublished data) (Table 5). In Mkunguni, Kizingitini and Shimoni sites where sharks and rays were reported to contribute large proportions of the total catch, respondents indicated that ~87% of their income was obtained from fishing (Table 5). All fishers were above 35 years of age while the level of education ranged between 6 years and 3 years (Table 5). The number of members per household ranged between four and five with Kizingitini having the largest household size at ~5 members per household (BYCAM, unpublished data).

Table 5. Social metrics obtained from communities in selected sites along coastal Kenya. Source: BYCAM, unpublished data.

			Years				% Income	
Landing	Age of	Level of	in	Household	Contributors	Fishers	from	Origin-%
sites	respondent	education	fishing	size	per HH	per HH	fishing	locals
Bamburi	49.4	6.2	25.8	2.5	1.6	1.1	88.6	54.5
Gazi	43.1	4.4	27.5	2.5	1.4	0.9	87.7	73.3
Kipini	39.4	3.5	17.9	3.4	2.3	1.3	79.5	42.9
Kiunga	51.8	2.7	36.2	4.2	1.8	2.0	100.0	100.0
Kiwayu	42.5	4.7	21.1	3.1	2.4	1.1	94.4	100.0
Kizingitini	52.2	3.9	30.4	4.8	1.7	1.4	85.8	100.0
Mkunguni	42.8	3.0	33.4	2.9	1.5	8.0	86.7	10.0
Mwaepe	47.3	4.2	25.3	2.9	1.9	1.2	86.9	13.8
Shimoni	51.5	5.0	22.5	2.7	1.6	1.2	87.1	3.2
Vanga	42.5	3.6	18.7	2.4	1.7	1.3	90.4	19.2

Farming, fishing related activities, small-scale trading and tourism activities were reported as alternative livelihoods in all the sites surveyed (BYCAM, unpublished data). There were fewer alternatives in the north coast sites, with an average of three including casual jobs, farming and animal husbandry in Kizingitini and Kiwayu. Kipini stood out as a site with numerous alternative livelihoods in the North Coast totalling 10 and may be due to the

location of the site at the location where River Tana flows into the Indian Ocean. Respondents interviewed in Kiunga fully relied on fishing and failed to mention any alternative livelihoods (BYCAM, unpublished data).

Alternative livelihoods undertaken by community members were site specific, for example, in Mkunguni the main alternative livelihood mentioned was farming and animal husbandry whereas in Shimoni tourism was mentioned most. Farming and animal husbandry was mentioned as alternative for a majority of the sites surveyed (BYCAM, unpublished).

4.7.2 Perceptions on shark and rays

Catch trends

Community members were interviewed on how they perceived changes in shark and ray catches through time by stating whether they increased, decreased or were the same (BYCAM, unpublished). Majority of the respondents stated that catches had decreased over time. Based on these findings, some of the factors affecting the catch and value of sharks and rays included: (i) seasonal variation, (ii) technological changes, (iii) overexploitation, (iv) inadequate enforcement of regulations for sustainable practices, (v) lack of proper gear, (vi) availability of markets and demand for sharks and by-products and (v) natural /supernatural phenomena (BYCAM, unpublished)

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Annexes 18 to 43 contain video files that cannot be played on the ICJ website

Annexes 18 à 43 contiennent des fichiers vidéo qui ne peuvent être diffusés sur le site Internet de la CIJ.