The Republic of Kenya
Country Profile

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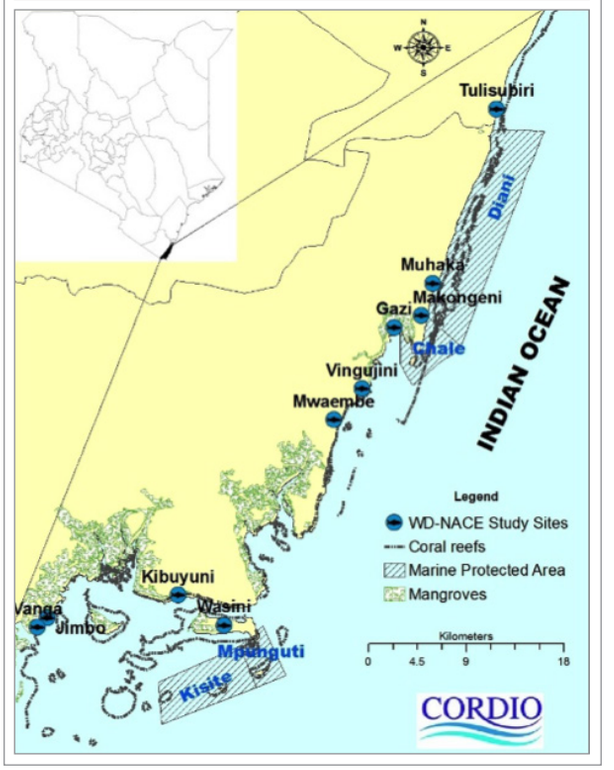
Key Country indicators

Location

The Republic of Kenya borders Somalia and Ethiopia to the North, Tanzania to the South, Uganda to the West and Indian ocean to the East. The country covers an estimated total land mass of 569,000 km^2. Its marine water (including the EEZ) and the continental coastline extends to about 142,000 km^2 and 640 km respectively (KMFRI, 2017). The coastline is very irregular, indented and fronted by islands of Lamu, Kiwayuu, Pate and Manda in the northern part and Funzi and Mombasa islands in the southern part.

Population	46,100,000
GDP US $ (billion)	63.4
GNI	
Total land area	569,000 km^2
Length of coastline	640 km
Exclusive Economic Zone	142,000 km^2
Continental shelf	km^2
Mangrove	610 km2
Coral reef	630 km2
Marine protected area	10% of territorial water



Source: (World Bank, 2017)

Marine resources

About 10 per cent of the territorial water is classified as marine protected area. The fringing coral reefs, distributed to depths of between 16 and 40 kilometres, cover an area of about 630 km^2 and extend to between 8 and 10 km offshores. The mangrove forest, most of which are located in estuaries and delta, cover an area of about 610 km^2 (World Bank, 2017).

Ocean biodiversity plays a significant role in the economy. Kenya's GDP is estimated at US $ 63.4 billion with fish and aquaculture contributing about 0.8 per cent. The sectors also provide direct employment to over 500,000 people and support over 2 million people indirectly (KMFRI, 2017).

Mangrove ecosystem

Kenya's mangrove ecosystem does not occur along a continuous belt but in patches along the coastline. Lamu county hosts 61 per cent of mangroves followed by Kilifi and Kwale at 14 per cent each (NEMA, 2017). Among the different landscapes on which the mangrove forests occur include the reef platforms around Mombasa and Lamu, in sheltered bays of Mida, Mto Fundisa, Shimoni, Ngomeni, Funzi and Vanga, along the creeks, estuaries and rivers such as Vanga, Ramisi and Port Reitz and Tudor creek, and on river mouths and delta of Tana and Sabaki river (Lugendo, 2016).

Kenya's mangrove forest is dominated by three main species namely the Rhizophora mucronata, Avicennia marina and Ceriops tagal (ROK, 2017). Other species include the Sonneratia alba, Lumnitzera racemose, Heritiera littoralis, Xylocarpus granatum and Xylocarpus moluccensis. The Mangrove ecosystem is very crucial to the marine biodiversity because its rich nutrients environment supports varieties of food chains and is feeding ground for invertebrates and fish. The mangrove forests support herbivores, which feed on the leaves and sessile invertebrates on the roots. The trunks and aerial roots are home to some crab species and gastropod molluscs. Crocodiles are also found in the mangrove occurring along Tana and Ramisi River (Marten, 1996).

County	% cover	Coverage in km^2
Lamu	61	373.50
Kwale	14	83.54
Kilifi	14	85.36
Mombasa	6	37.71
Tana River	5	32.60
Total	100	612.71

Source: (NEMA, 2017)

Ecologically, the mangrove ecosystem acts as buffers against storms and winds, the two of which hasten riverine erosion and shoreline destabilization. They also trap runoff sediments thus avoiding siltation of coral reefs and seagrass beds. The mangrove forest is also of economic importance. It is a source of fuelwood, medicine, fish traps and house construction (NEMA, 2017). The Rhizophora mucronata and Ceriops tagal are useful in timber production as poles, rafters and posts.

Coral reefs

The coral reefs of Kenya are mainly categorized into patch reef and fore reefs extending from the northern part of Lamu to Somali border and a 200 km continuous fringing reef extending from Malindi to Shimoni. More than 112 and 28 species of hard and soft corals respectively have been identified in Kenya.

Sea grass beds

Sea grasses mostly occur in shallow reef slopes, creeks and sheltered tidal flats. They are a key habitat for existing adjacent species. For instance, they act as foraging grounds for the endangered marine turtles and dudongs (NEMA, 2017). Kenya has about 336 km^2 of seagrass cover and 12 species of sea grass, the most dominant one being Thalassondendron ciliatum (NEMA, 2017). This specie provides important habitat for invertebrates and juvenile fish. Other species include Halodule uninervis, Halophila ovalis, Halodule wrightii, Halophila minor, Syringodium isoetifolium, Zostera capensis, Cymodocea rotundata, Enhalus acoroides, Cymodocea serrulata, Halophila stipulacea and Thalassia hemprichii (Ochieng & Erftemeijer, 1993) (KMFRI, 2017). Kenya's Aquaculture Brief 2017: Status, Trends, Challenges and Future Outlook. Kenya Marine and Fisheries Research Institute, Mombasa, Kenya.

Ecosystem management and conservation

The challenge

Kenya's coastal ecosystems and biodiversity provide a myriad of ecosystem services. However, they are threatened by over-exploitation, pollution, urbanization and climate change. Integrated coastal zone management (ICZM) is a policy response being employed to deal with these multiple challenges.

The Situation

Degradation of Mangrove forests

About 4 mangrove forest communities exist along the Kenyan coastline. They include the riverine mangrove forests, fringe mangrove forests, overwash mangrove forests and the basin mangrove forest. The distribution and survival of each of the mangrove forest community is dependant on the frequency of tidal flooding, soil type, salinity, drainage and plant interference (ROK, 2017). The tidal pattern and the shore's level above sea level greatly influences the depth to which mangroves are inundated. Fluctuation in the ocean water salinity as a result pollution significantly affects the growth of mangrove forest. Hard soils with extreme levels of alkalinity result in poor drainage and waterlogged conditions, which stagnate the growth of mangrove forest. Plant interference results into competition for space between the mangrove ecosystem and other plants growing along the coastline. Sea level rise poses a major threat to mangrove ecosystems through sediment erosion, inundation stress and increased salinity at landward zones

The mangrove cover in Kenya has been on the decline over the years. Between 1985 and 2010, about 9,698 hectares of mangrove cover, with Tana River and Kilifi recording the most loss as shown in table 1 The reduction in mangrove cover is attributed to over-exploitation, encroachment into the mangrove ecosystem for other land uses, pollution, flooding, sedimentation, poor linkages between different stakeholders and climate change.

Table 1: Trends in Mangrove cover in Kenya 1985-2010

Place	1985	1992	2000	2010	% loss as at 2010
Lamu	23,371	22,629	20,661	20482	12.4
Gazi-Vanga	14,049	13,602	12,945	12,790	9.0
Tana River	10,434	9,119	7,350	6,450	38.2
Mombasa	3,360	3,075	2,846	2,816	16.2
Mida Creek	3,300	3,184	3,009	2,939	10.9
Kilifi	474	274	123	114	75.9
Total	55,288	51,883	46,934	45,590	17.5

Source: Kurui et al, 2012

Bleaching of the coral reefs

The El Nino event of 1997-98 affected some of the coral reefs leading to bleaching and to date, recovery of the affected coral reef has been poor. Some escaped the bleaching effects due to their high coral cover and diversity (Obura, et al., 2017). Efforts have been made through regional monitoring and reporting, policymaking and development of international and national network of scientists to maximize recovery (FAO, 2012). For instance, through the Nairobi Convention, the Eastern Africa countries set up an Inter-governmental Task Force on coral reefs in 2002. Other pressures of coral reefs come from climate change, over-fishing, deforestation, poverty, pollution, unplanned tourism and poor land management practices.

Challenges to seagrass

Anthropogenic threats to sea grass beds include shoreline construction, mechanical damage and eutrophication, while natural causes include overgrazing, sand wave motion and storms. Overgrazing on seagrass by the sea urchins is the principal threat to the sea grass existence. Eutrophication and reduced predation by fish has triggered overgrazing on the seagrass by the sea urchin (NEMA, 2017).

Lack of a true continental shelf has resulted into overexploitation of coastal resource and increased human activities hence negatively affecting the development of seagrass. Human activities such as the deepening of the channels at harbours has resulted into seagrass uprooting and burial by dredge-spoil. The increasing number of marine reserves, shore hotels and motor boat propellers because of the expanding and busting tourism industry has substantially damaged the seagrass ecosystem. Seagrass remain unprotected in some popular tourist attraction areas hence posing a threat to the survivability.

Damaging fishing practices such as dredging and the use of seine nets has hauled a large quantity of seagrass, casting them under severe pressure. Trawling and seining net techniques are non- selective in their capture hence posing a serious threat to the sea grass existence.

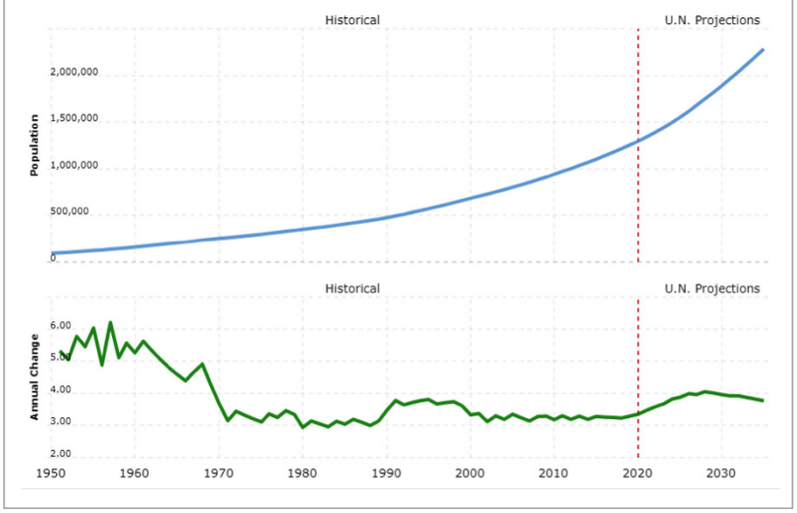
Other contributing factors to the poor status of sea grasses include: lack of awareness on the contribution of seagrass to the coastal ecosystem, absence of up-to-date information and the unknown status of most seagrass meadow, limited research on seagrass scientific conservation measures, limited understanding on the linkage between seagrass and climate change and a poor understanding of the threats posed to seagrass by the local coastal activities.

The Constraints

Population growth

Rising coastal population is putting pressure on the coastal and marine resources. The current population of Mombasa in 2020 is 1,296,000, a 3.35% increase from 2019; and historical data shows that it was 476,000 in 1990 (UN, 2019). Most of these people have migrated to the coastal areas from inland in search of employment in tourism, fisheries and maritime industry. The result has been increased pressure on coastal resources for instance demand for land for settlement, waste management, and on the aquatic ecosystem and resources. Increased tourism for instance, exerts pressure on the coral reef development through over-exploitation and competition for access (Obura, et al., 2017).

Figure1: Population growth in Mombasa 1950-2030



Source: (UN, 2019)

Climate change

The impacts of climate change including rising temperatures, flooding, increases in extreme events and sea level rise all have the potential to impact coastal ecosystems greatly. Of these, sea-level rise is thought to be the greatest climate change challenge that mangrove ecosystems will face (McLeod & Salm, 2006).

Increases in temperature induces bleaching of the coral reefs and accelerates mortality rate. In 1998, the hard-coral cover reduced to 8 per cent. The coral cover remained below 10 per cent between 1999 and 2003. The year 2013 marked a slow recovery to 25 per cent, which consequently dropped to below 25 per cent between 2014 and 2015 (Obura, et al., 2017). The coastal zone has significant low-lying land areas that are vulnerable to increased flooding, landward saltwater intrusion, and shoreline erosion, including recently developed areas (Okemwa, Ruwa, and Mwandotto, 1997). Tourist and port facilities and other industries could particularly be affected. Ecologically, loss of coral reefs, coastal and marine biodiversity, and fisheries is also possible. Informal and/or unplanned settlements in the coastal zone also negatively impact the environment through the poor drainage system, and also lead to high vulnerability (e.g., due to intense back-to-back development lead.

The Opportunity

Strengthening coastal zone management

Notwithstanding having adopted an Integrated Coastal Zone Management approach, the management and planning of most of the sectors, constituting the marine diversity, is largely sectoral. The sectoral management is usually characterized as unplanned and uncoordinated. There is opportunity to address this challenge through a more streamlined approach to institutional and policy planning.

The signing of the Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region. The convention requires Kenya to take measure to prevent, reduce and combat pollution of convention area;

Mangrove Development Programmes

The government of Kenya has endeavoured to restore the mangrove ecosystem through policies, programmes and institutional approaches. There is a National Mangrove Ecosystem Management Plan for the 2017-2027 which provides a map towards the sustainable management and utilization of the mangrove ecosystem (ROK, 2017). It also highlights the following programmes:

- **Tourism Development Programme:** developing tourism and maximizing revenue flow through marketing and safeguarding mangroves' integrity.
- **Fisheries Development and Management Programme:** sustainable conservation of the mangroves for their role in providing habitat and acting as breeding grounds for wildlife and fisheries.
- **Mangrove Forest Conservation and Utilization Programme:** focusing on sustainable management of mangrove ecosystem for wood purposes without jeopardizing the environment's integrity.
- **Community Programme:** promoting local institutional capacity and community involvement in mangrove conservation and management.

- **Human Resource and Operations Programme:** providing appropriate equipment and skills to motivate personnel to fast track monitoring and ensure proper operations of institutions involved in management and conservation of the mangrove ecosystem.
- **Research and Education Programme:** supporting all the other programmes by providing information and intervention activities through research, training and education.

Seagrass and Coral Reef Management

Kenya has fast tracked the management and conservation of the sea grass and coral reef ecosystem through a number of policies including the Integrated Coastal Zone Management Plans and Policy, the National Coral Reef and Sea Grass Ecosystem Conservation and Management Strategy (2014-2018), and the participation of communities in coastal ecosystem management and conservation through the Community Conservation Areas (CCA).

Kenya began the long term monitoring of coral reef in 1987; and this constitutes part of the Global Coral Reef Monitoring Network. The monitoring sites fall into two categories, namely, within the protected areas and the unprotected areas. The protected areas include the Malindi Marine National Park, Mombasa Marine National Park, Watamu Marine National Park and the Kisite Marine National Park. The unprotected sites include the Vipindo reefs and the Diani Marine National Park. Various stakeholders at the national levels, namely, the Wildlife Conservation Society (WCS), the Kenya Marine and Fisheries Research Institute (KMFRI), the Kenya Wildlife Service (KWS) and the Coastal Oceans Research and Development (CORDIO) East Africa.

Supporting legal and institutional framework

Kenya Maritime Authority Act, No. 5 of 2006 establishes the Kenya Maritime Authority which has oversight over Kenya's maritime industry. Among its duties are localization and implementation of international conventions, pollution control, preservation of the marine environment, trade and investment, maritime safety and security. The Merchant Shipping Act, 2009 has enhanced delivery of services by the Authority in these areas.

The Kenya Maritime Authority (KMA) is established by the Kenya Maritime Authority Act. The Authority exercise regulatory oversight over the Marine Industry by implementing the co-ordination of maritime security; inspecting ships to ensure maritime safety and prevent pollution; overseeing the recruitment, training and welfare of seafarers; ensuring collaboration with various stakeholders; undertaking maritime research and surveys; and maintaining and administering register of ships. All foreign vessels arriving at the Mombasa port are inspected by Kenya Marine Authority in compliance with the Indian Ocean Memorandum of Understanding on Port State Control. Inspection is necessary to ensure marine safety, compliance with regulations and protection of the marine environment.

The Kenya Maritime Authority also oversees the operation of the Regional Maritime Rescue Coordination Centre (also called Mombasa Information Sharing Centre) which provides a platform for seafarers to call for help whenever in distress

The Environmental Management and Co-ordination Act, No. 8 of 1999 ensures management of the environment including the coastal zones. The Act grants the Cabinet Secretary the power

to declare the coastal zone a protected area. It also mandates the Cabinet Secretary to survey and prepare an integrated national coastal zone management plan based on survey report (section 55). Section 55 imposes criminal sanctions against any person who releases hazardous substances into the coastal zone. Convicted polluters are required to pay not less than one million or face an imprisonment not exceeding two years (subsection 5). The National Environment Managemeet Authority is the regulatory body and it is responsible for coordinating environmental management activities; examining land use patterns to ascertain impact on quantity and quality of natural resources; advising the government on legislative and other environmental management measures including the implementation of international convention; and assessing activities to ensure they do no degrade the environment.

Kenya Ports Authority Act 2012 established the Kenya Ports Authority (section 3) and provides for its functions, management and operations including power to construct ports, wharf and pier. The Authority is also responsible for cleaning and deepening the ports, determining levies, rates and fares charged, and prohibiting and regulating the use of any service provided by the Authority. Most of these activities have been limited to the Mombasa port and harbours in Lamu, Kilifi, Malindi, Mtwapa, Shimoni, Vanga, Kiunzi and Funzi. However, there have been new developments over recent years including the construction of a new container and oil terminal and the development of the Standard Gauge Railway linking Mombasa and Nairobi. These all come with added need for environmental scrutiny as the probability of ecosystem degradation is high.

Marine Protection Areas

The concept of Marine Protected Areas (MPA) began in 1968 with the establishment of the Malindi-Watamu Marine National Park and Reserve. Currently, Kenya's marine protection areas cover an area of about 1,139 km^2, representing about 10 per cent of the territorial waters. There are two types of MPAs in Kenya - marine national park and marine national reserve. The former prohibits any form of consumptive utilization but research and tourism. The latter allows the traditional resource utilization including research and tourism. MPAs in Kenya aim at protecting the marine and conserving the coastal and marine ecosystem and biodiversity such as the seagrass, mangrove, coral reefs and beaches. The sustainable conservation of the coastal and marine biodiversity is crucial for the sake of the future of generation. It is also important to protect the marine diversity for research, recreation, education and other development purposes.

Table 2: Key details about the marine protected areas in Kenya

MPA	Designation	Size (km^2)	Climate
Mombasa	National Park National reserve	26 200	Hot and humid
Kiunga	National reserve	250	Humid 22-34^{0}C 500mm pa
Malindi	National Park National reserve	6 213	20-30^{0}C 200-700mm
Watamu	National Park National reserve	10 32	Humid 22-34^{0}C
Mpunguti	National Park National reserve	28 11	Humid 22-34^{0}C 500mm pa
Diani – Chale	National reserve	165	-

Source: Eleventh Schedule: Wildlife Conservation and Management Act, No. 47 of 2013

Ban on plastics

Kenya is committed towards the prevention and reduction of marine pollution as a result of floating plastic debris. The implementation of SDG 14 has partly been possible through the ban on the use of plastic, published in the Kenya Gazette notice 2356 of 28th February 2017 (NEMA, 2017). Details are included in table ….below. Plastic waste has impacts on both terrestrial and aquatic ecosystems. Most originate in urban areas and, as a result of poor urban waste management, eventually find their way into the lakes, rivers and oceans where they negatively impact on the aquatic biodiversity. For instance, prior to its closure in April 2018, the Kibarani dump site in Mombasa has long been a public health concern for locals and a source of marine pollution. a study estimates the prevalence of plastics ingested by livestock while feeding at 50 per cent in some parts of the country (Lange, et al., 2018).

Table 3: Scope of application of the ban on plastics in Kenya

Category	Description	Extent of ban	Exception
Category 1	Plastic carrier bags (juala) used for secondary packages for items.	All	None
Category 2	Flat bags for carrying items outside industrial setting.	Some	Bags used for industrial primary package.
Category 3	Flat bags used as garbage and hazardous waste liners.	Some	Hazardous waste liners are exempted if clearly and labeled, color coded and incinerated with the waste. Garbage liners are exempted if clearly labelled and have effective Take Back Schemes.
Category 4	Duty Free shop bags issued at the airport.	-	Are exempted due to the ICAO and IATA Rules and Regulations.

Source: (NEMA, 2017)

Pollution control

The Environmental (Prevention of Pollution in Coastal Zone and other Segments of the Environment) Regulations, 2003 regulations prohibit ships from discharging hazardous substances into the Kenyan territorial waters. The regulations require ships to carry Oil Record Book detailing machinery and ballast operations, and precludes ships from leaving the port without producing a valid certificate of discharge of waste. Discharge into the territorial waters is permitted under exceptional circumstances. These include:

- Where it is necessary to secure safety of human life;
- Emergencies posing threat to the marine environment;
- Government ships engaged in Government non-commercial service; and
- Warships and ships operated by a MARPOL state member and used on Government non-commercial service.

Fisheries

The challenge

The fisheries sector plays a critical role to the Kenyan economy. The sector supports food security, livelihoods and the national economy. However, poverty is a challenge and this is driving people to use destructive fishing methods to catch more fish and damaging the sector.

The situation

Fish production

Kenya's total fish production in 2016 was estimated at 128,645 metric tonnes, a decrease from 163,389 metric tonnes in 2013. The total marine fish landing in 2016 was estimated at 9,095 metric tonnes, which was also a decrease from 9,136 metric in 2013 as shown in table … (ROK, 2018). According to the World Bank, the total fisheries production in 2017 was about 184,000 metric tons (World Bank, 2017). The fluctuation in the total fish production in Kenya, both from freshwater and marine source, has been due to unregulated fishing, inadequate fisheries infrastructure and climate change.

Table 4: Fish production in Kenya 2013-2017 in Metric tonnes (MT)

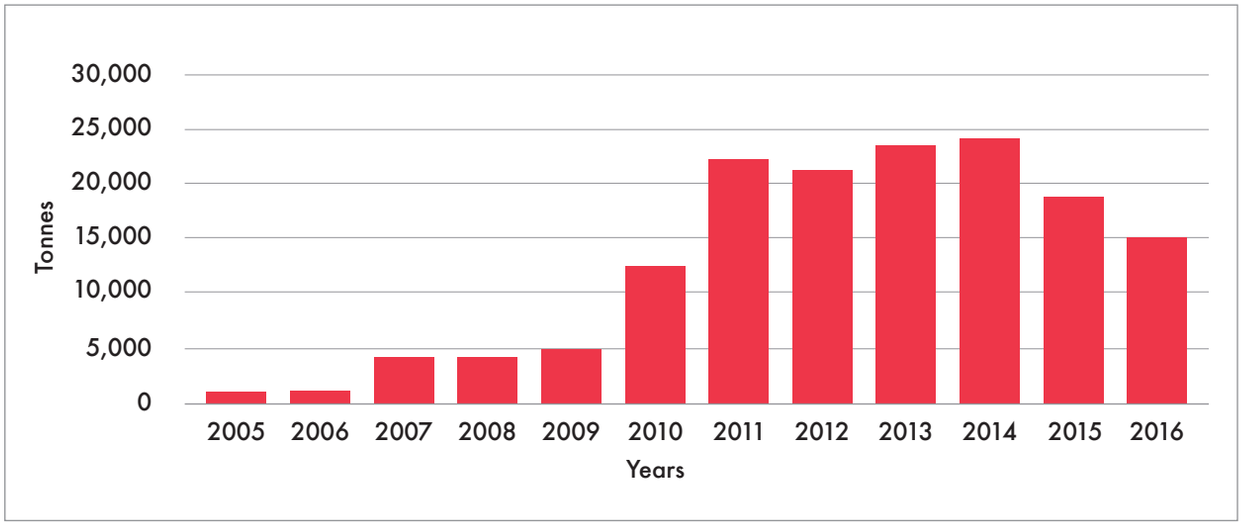
Category	2013	2016	2017
Freshwater	154,253	119,550	-
Marine fish landing	9,136	9,095	-
Total	163,389	128,645	184,000

Source: (ROK, 2018)

Aquaculture

Kenya's aquatic life is premised on the vast water resource network consisting of rivers, lakes and the Indian Ocean. The inland water resources extent is estimated at 18,029 km^2 while the Exclusive Economic Zone (EEZ) and the Continental coastline are estimated at 142,400 km^2 and 640 km respectively. This unlimited water resource has the potential to support fish production at sustainable levels. According to the Kenya Marine and Fisheries Research Institute (KMFRI), the fisheries sector contributes about 0.8 per cent to the Kenya's GDP. The sector also directly employs and indirectly supports 500,000 people and 2 million people respectively. In addition, it boosts food security agenda and facilitates poverty reduction among Kenyans.

Kenya has established the Aquaculture Business Development Programme whose completion is expected to be in April 2026. The Programme's goal is increase food security, income and nutrition among poor small-scale farmers in aquaculture sector, achievable through partnerships and protection of critical ecosystems.



Source: (UN, 2019)

Kenya has experienced a remarkable growth of the aquaculture sector. Currently, Kenya is ranked the 4th major aquaculture producer in Africa. Aquaculture production has been on the rise in Kenya until 2015 as represented by the table below. The success of the sector has been attributed to government programmes such as the Economic Stimulus Programme to which the Kenyan Government channeled about Kshs 22 billion to stimulate growth.

The constraints

Poverty

Poverty rate is also a major concern with about 42 per cent of the Kenyan population live below the poverty line. This rate is higher at the coastal regions since most fishers earn about US $ 2.01-2.80 (Kshs 201-280) per day (Obura, et al., 2017). Such low financial returns have compelled fishers to resort to destructive methods of fishing such as use of trawlers and purse seining to maximize daily catch for high economic returns. Such methods have deleterious effect on coral reef development.

Overfishing

Excessive fishing has been a major threat until the El Nino experience in 1998. The practice was facilitated through the use damaging techniques such as pull-seine nets, use of small mesh nets and poison. The population of fishers has also increased drastically due to factors such as poverty and increase in general population. Unprotected areas have recorded about 15-20 fishers per km^2, which is the 10 fishers per km^2 threshold set as the Maximum Sustainable Yield (MSY).

Illegal, Unreported and Unregulated (IUU) fishing

Fisheries contributes about 0.8% to the Kenyan Gross Domestic Product and employs up to 2,500,000 people directly and indirectly. However, fish stock in Kenya is rapidly decreasing due to IUU fishing. It

is estimated that Kenya loses up to Ksh. 10 billlion annual because of IUU fishing activities (MoAF&L, 2015). These unsustainable activities destabilizes the progress made towards ensuring food security and sustainable development.

Inadequate public participation

Although Kenya has undertaken a number of measures to include communities in coastal management through programmes such as Community Conservation Areas (CCAs), the level of participation is still inadequate. This is attributable to limited communication, awareness and education on coastal management techniques. The strategies for community empowerment as also inadequate.

The opportunity

The blue economy concept: Opportunity for growth

Kenya has a growing gap between consumption and fish supply attributable to population growth and decline in wild fish catch. These two factors have certainly increased the demand for fish, which the extensive freshwater resource cannot meet. The decline in the wild fish catch has resulted into the decline in rate of fish consumption. In 2009 the per capita annual consumption was estimated at 5 kg/capita/year and decreased to 4.5kg/capita/year in 2017. Besides the high demand for fish both locally and regionally, the concept of blue economy also marks an opportunity for growth. The concept, which advocates for sustainable utilization and management of marine resources, will certainly promote job creation and revitalize the marine based economy through its many concepts such as cage culture, Aquaponics, Integrated RAS and breeding of indigenous species.

The Blue Economy Programme aims to ensuring capacity building for Blue Economy, develop a Blue Economy Master Plan, a Blue Book and a Blue Economy Database, strengthen Beach Management Units (BMU), create awareness among the youth on Blue Economy, and revive the Kenya National Shipping Line (KNSL). Furthermore, the Exploitation of Living Resources under Blue Economy Programme has the mandate to establish a National Fishing Fleet for the Exclusive Economic Zone (EEZ), promote the production and consumption of fish, regulate fish land site, boost capacity for artisanal fishers, and promote sea weed farming

The institutional, legal and policy framework

Kenya Maritime and Fisheries Research Institute (KMFRI) was established in 1979 by the Science and Technology Act (repealed by the Science, Technology and Innovation, No. 28 of 2013). The Institute undertakes research in marine and freshwater fisheries, aquaculture, chemical and oceanography.

The National Marine Spills Response Contingency Plan outlines the procedure to be followed in the event of oil spill. The Plan involves the participation of different stakeholder including the Kenya Port Authority, oil companies and Oil Spill Mutual Aid Group (OSMAG). However, its managed by the Kenya Maritime Authority. The Plan provides a platform through which Kenya can meet and implement her obligations under international treaties such as the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and International Convention on Oil Pollution Preparedness, Response and Co-operation, 1990 (OPRC Convention). The former obligates Kenya to adopt measures prevent, reduce and control the pollution of the marine environment from, among others, oil handling facilities. The latter requires Kenya to adopt measures to prepare and respond to oil spills incidents.

The Fisheries and Maritime Infrastructure Development Programme aims to construct port in Lamu, Mombasa, Kilifi and Shimoni. The Programme is projected to inject Kshs.20 billion to the Kenyan GDP and create jobs to over 12,000 people. The Programme will construct markets, fish processing plants and cold storage facilities.

The Kenya Marine Fisheries and Socio-Economic Development (KEMFSED) Programme aims to establish the Shimoni Mariculture Research Centre, operationalizing fisheries management plans and develop a Fishery Information System

Cooperation and Implementation of Regional/International Frameworks and Standards Programme hopes to strengthen regional and international cooperation through:

- Implementing regional and international treaties relating to fisheries, maritime and aquaculture
- Domestication of the African Charter on Maritime Security and Safety and Development in Africa (Lome Charter) upon the completion of its draft Annexes. The Lome Charter aims at preventing and suppressing IUU fishing, protecting the marine environment and promoting sustainable Blue Economy.
- Implementing the processes of the Indian Ocean Rim Association

Aquaculture Technology and Development and Innovation Transfer Programme aims to develop market outlets for farmed fish, promote recreational fisheries, implement a national fish breeding programme in Ngomeni, Sagana and Kiganjo, implement the Youth Aquaculture Programme and promote the transfer of aquaculture technology to various stakeholders.

The Research and Development Programme focusses on researching on ways to promote investment in the Blue Economy. Other points of focusses include valuation of coastal and marine resources, commercializing and diversifying the aquaculture species and research on maritime and shipping affairs.

The Maritime Risk and Disaster Management Programme manages marine disaster investigations in Kenyan waters, control marine pollution and promote the use of navigation aids for safety.

The Maritime Cluster Enterprises Development Programme focusses on establishing funds for the different stakeholders in the maritime sectors including the Seafarers Training Fund, Shipping and Maritime Training Fund, Cluster Development Fund and Women in Maritime Fund.

The Aquaculture Business Development Programme is a partnership between the International Fund for Agricultural Development (IFAD) and the Government of Kenya, implemented by the Ministry of Agriculture, Livestock, Fisheries and Irrigation. The Programme aims at improving food security and nutrition among poor households engaged in aquaculture.

Opportunity for policy reforms

Considering the contribution of the private sector to the marine economy, Kenya ought to establish a framework that will support they involvement in the maritime industry. Kenya has a Marine Insurance Act (Cap 390) which provides for insurance of marine cargo against risk associated with sea voyage. However, the system for the issuance of Marine Cargo Certificates is prone to fraud. Kenya needs

to strengthen and ensure compliance in issuance of Marine Cargo Insurance Certificates through a platform that is verifiable and genuine. The certificate should have security features to avoid incidents of fraud and boost confidence amongst certificates holders.

The Achieving gender equality in the maritime sector

Efforts to ensure gender parity and empowerment of women in the maritime sector has borne fruits as evidenced by the Kenya Maritime Authority's commitment to implement IMO programmes that require the integration of women in the maritime sector. For instances, the Association of Women in the Maritime Sector in East and Southern Africa in consultation with the Kenya Maritime Authority, launched the WOMESA Kenya chapter in 2010. The Association aims at promoting women's role in the maritime sector by developing mentorship, nurturing smart partnership and undertaking research to advance women and the development of maritime sectors.

The Maritime Cluster Enterprises Development Programme is also planning to establish the Women in Maritime Fund to empower women and promote gender diversity in the maritime community. In addition, the Kenya Maritime Authority has sought to ensure the diversification of the maritime sectors by encouraging the recruitment of youth and female cadets.

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