KENYA MARINE AND FISHERIES RESEARCH INSTITUTE
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MOMBASA

CORPORATE STRATEGIC PLAN 2018 – 2022

MOTTO: Excellence in Blue Economy Research

REVISED 2020

KENYA VISION 2030
Towards a globally competitive and prosperous nation.

Vision

A Centre of Excellence in innovative research in marine, fisheries and the Blue Economy for development.

Mission

To generate and disseminate scientific information for sustainable development of the Blue Economy.

Core Values

To fulfil her mandate and realize its mission, the operations of KMFRI are guided by the following core values:

i. Integrity

ii. Transparency and accountability

iii. Professionalism

iv. Teamwork

v. Equity and equality

FOREWORD

The Kenya Marine and Fisheries Research Institute (KMFRI), in line with Government policies and development plans, has developed a five-year strategic plan. The plan covers the period 2018 – 2023 and is anchored on Kenya Vision 2030 and, the Third Medium Term Plan (MTP III) 2018 - 2022, considering the provisions and expectations of the Constitution of Kenya 2010 as well as the Big Four Agenda. The Vision 2030 is the long-term development blueprint expected to transform Kenya into a rapidly industrializing middle-income nation enjoying a high quality of life by the year 2030.

The Third Medium Term Plan (MTP III) of the Kenya Vision 2030 has identified Blue Economy and research as one of the sectors falling under the Economic Pillar of this Vision. The Constitution of Kenya 2010 and the Kenya Vision 2030 explicitly place a premium on the generation and management of a knowledge-based economy and the need to raise productivity and efficiency. It is against this background that KMFRI being a National Research Institute has developed this Strategic Plan. The Strategic Plan has incorporated issues under the Blue Economy, and the pivotal role played by KMFRI.

During the Plan period, KMFRI, under the guidance of the Board of Management, will continue to provide quality and relevant aquatic and fisheries research data and knowledge required for the development of the Blue Economy sector. This is in line with increasing demand for fisheries products and other aquatic resources at the same time ensuring their sustainability for the present and future generations.

To enhance KMFRI's efficiency and improve service delivery, the Strategic Plan proposes a new organization structure. The new structure takes into consideration the needs of the Devolved Government System, Blue Economy and emerging issues in aquatic research. In the development of this Strategic Plan, a participatory process involving key internal and external stakeholders was embraced, the result of which is this quality Plan. The implementation of the Plan will lead to provision of effective and quality service to Kenyans.

I have no doubt that with cooperation and support from other government ministries/agencies, development partners and stakeholders, KMFRI will greatly contribute towards transforming the Blue Economy sector into an innovative and commercially oriented sector in line with the aspirations of Vision 2030, and The Big Four Agenda initiative by H.E The President.

HON. JOHN SAFARI MUMBA
CHAIRMAN, BOARD OF MANAGEMENT

PREFACE

The Strategic Plan 2018 – 2023 lays a firm foundation for fulfilling the mandate of KMFRI which is anchored on research and knowledge management. The Institute is mandated to undertake research in marine and freshwater fisheries, aquaculture, environmental and ecological studies for sustainable exploitation of fisheries and other aquatic resources. In delivering this mandate, the Institute will focus on environmental, economic and social considerations, which are critical for sustainable development of the Blue Economy.

The preceding Strategic Plan (i.e., 2016 – 2020) was reviewed midstream to align it to MTP III and the Big Four Agenda. This new Strategic Plan focuses on four key result areas, namely to: (i) conduct innovative research for the Blue Economy; (ii) transfer knowledge and innovative technologies to communities and stakeholders; (iii) mobilize and manage resources and strengthen institutional capacity; and (iv) promote local and international collaborations and partnerships.

The Strategic Plan sets out strategies and interventions that seek to address the current situation in the context of promoting quality service delivery, efficiency and effectiveness, development of alternative financing options, development of human capacity and enhancement of the sector's capacity, support systems and good governance. The Plan is the basis for formulation of KMFRI's annual work plans, resource bidding and performance contract targets. I, therefore, call upon all KMFRI staff and relevant stakeholders to work together for the realization of the strategic objectives contained in this Strategic Plan. With effective implementation of this plan, I am confident that research at KMFRI will be taken to the next level.

I wish to thank the Chairman of KMFRI Board of Management, Hon. John Safari Mumbaand the entire Board of Management for the support and policy direction provided in preparation of this Strategic Plan. I would like to thank KMFRI Team which spearheaded the review of the Plan. Special thanks also go to KMFRI Staff and all other external stakeholders who directly or indirectly contributed towards the preparation of this Strategic Plan.

PROF. JAMES M. NJIRU, PH.D
DIRECTOR GENERAL/CEO

DEFINITION OF TERMS

Baseline: Baseline 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.

Indicator: An indicator is a sign of progress/change that results from a 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.

Key Results Areas/Strategic Focus Areas: This is an outline of the organization's areas of focus. It also refers to the general areas of outputs or outcomes for which an organization's role is responsible.

Outcome Indicator: 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.

Outcome: 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, programmes, products and other initiatives) in which it engages.

PESTEL Analysis: It is a framework or tool used to analyse and monitor the environmental (external) factors that have an impact on an organization.

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.

Strategic Planning: It is the process of defining an organization's strategy or direction and making decisions on allocating its resources to pursue this strategy; it involves setting goals, determining actions to achieve the goals, and mobilizing resources to execute the actions.

Strategic Objectives: These are what the organization commits itself to accomplish in the long term; they establish performance levels to be achieved on priority issues and measures of success in fulfilling critical mission statement elements.

SWOT Analysis: It is used for understanding the strengths and weaknesses (internal factors) of the organization and for identifying both the opportunities open to the organization and the threats it faces (external factors).

Target: A target refers to planned level of an indicator achievement.

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ACRONYMS AND ABBREVIATIONS

AD	Assistant Director
AMIP	Aquaculture Marketing Information Platform
ARD	Aquaculture Research and Development
ARK	Aquatic Resources Kenya
ASAL	Arid and Semi-Arid Areas
ASK	Agricultural Society of Kenya
BIMS	Biodiversity Information Management System
BMU	Beach Management Unit
CAM	Corporate Affairs Manager
CCAs	Community Conservation Areas
CD	Centre Director
CEO	Chief Executive Officer
CFAs	Community Forest Association
CIDP	County Integrated Development Plan
COP	Conference of Parties
CORDIO	Coastal Oceans Research and Development in Indian Ocean
CPUE	Catch Per Unit Effort
CRO	Chief Research Scientist
DD	Deputy Director
EAC	East Africa Community
EAF	Ecosystem Approach to Fisheries
EAFFRO	East Africa Freshwater Fisheries Research Organization
EAMFRO	East Africa Marine Fisheries Research Organization
EEZ	Exclusive Economic Zone
EFMIS	Enhanced Fish Marketing Information System
EIA	Environmental Impact Assessment
ERP	Enterprise Resource Planning
EU	European Union
F&P	Finance and Planning
FADs	Fish Aggregation Devices
FAO	Food and Agriculture Organization
FDEMU	Fish Diseases and Environmental Monitoring Unit
FKE	Federation of Kenya Employers
FWS	Fresh Water Systems
GDP	Gross Domestic Product
GEF	Global Environment Facility
GOK	Government of Kenya
GOOS	Global Oceans Observing System
GVP	Gross Value Production
HOD	Head of Department
IAEA	International Atomic Energy Agency
ICT	Information Communication Technology

ICZM	Integrated Coastal Zone Management
IEC	Information, Education and Communication
IFS	International Foundation for Science
ILO	International Labor Organization
IMS	Institute of Marine Science
IOC	Intergovernmental Oceanographic Commission
IOIEA	International Ocean Institute
ISO	International Standards Organization
IT	Information Technology
IUCEA	Inter University Council of East Africa
IUCN	International Union for Conservation of Nature
IUU	Illegal Unregulated Unreported
KEBS	Kenya Bureau of Standards
KEPHIS	Kenya Plant Health Inspectorate Service
KFS	Kenya Forestry Service
KIPI	Kenya Industrial Property Institute
KMA	Kenya Maritime Authority
KMFRI	Kenya Marine and Fisheries Research Institute
KMFRIES	Kenya Marine and Fisheries Research Institute Enterprise Services
KRA	Key Results Areas
KSh	Kenya Shillings
LAN	Local Area Network
LAVIBI	Lake Victoria Biodiversity Informatics
LVFO	Lake Victoria Fisheries Organization
LVFRO	Lake Victoria Fisheries Research Organization
MDAs	Ministries, Departments and Agencies
M&E	Monitoring and Evaluation
MGT	Institute Management
MOU	Memorandum of Understanding
MSc	Master of Science
MTEF	Medium Term Expenditure Framework
MTP II	Second Medium Term Plan
NACOSTI	National Commission for Science Technology and Innovation
NEMA	National Environment Management Authority
NORAD	Norwegian Development Agency
NPVA	Natural Products Value Addition
OCS	Oceans and Coastal Systems
ODINAFRICA	Ocean and Data Information Network for Africa
OH	Oceanography and Hydrography
PAS	Performance Appraisal System
PESTEL	Political, Economic, Social, Technological, Environmental and Legal
PC	Performance Contract
PhD	Doctor of Philosophy

PPP	Public Private Partnership
PPPGs	Policies, Procedures, Plans and Guidelines
PR	Public Relations
RBA	Retirement Benefits Authority
RMS	Risk Management System
RRR	Reduce Recycle and Re-use
RV	Research Vessel
SCAC	State Corporations Advisory Committee
SDF-BE	State Department of Fisheries and Blue Economy
SDG	Sustainable Development Goals
SE	Socioeconomics
SIDA	Swedish International Development Agency
SM	Station Managers
SP	Strategic Plan
SRO	Senior Research Scientist
STI	Science Technology and Innovation
SWIOFP	South West Indian Ocean Fisheries Project
SWOT	Strength, Weakness, Opportunities and Threats
TAFIRI	Tanzania Fisheries Research Institute
UN	United Nations
UNCLOS	United Nations Convention on Law of Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nation Educational Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USA	United States of America
WIOMSA	Western Indian Ocean Marine Science Association
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY

This Strategic Plan is guided by the Constitution of Kenya 2010, the Kenya Vision 2030, The Third Medium Term Plan (MTP III) 2018 - 2022, the Blue Economy Sector (2018 - 2022), the Government Big Four Agenda, Executive Orders, the National Oceans and Fisheries Policy 2008, the African Agenda 2063 and United Nations Sustainable Development Goals (SGDs)and other government policy documents. The Plan is also guided by lessons learnt, constraints and challenges encountered in the implementation of the KMFRI's Strategic Plan 2016 - 2020.

The Strategic Plan is structured into five chapters. Chapter one gives the background information on the Institute; Blue Economy sector development challenges at the global, regional and national levels; role of the Institute towards Kenya's development agenda; rationale for the Strategic Plan; the development process of the plan; and the structure of the Plan. Chapter two provides evaluation of KMFRI's Strategic Plan (2016 - 2020) covering achievements, challenges and lessons learnt. The chapter also presents the Political, Economic, Social, Technological, Environmental and Legal (PESTEL) analysis; Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis; and the stakeholders' analysis. Chapter three gives the strategic focus areas, six strategic objectives and the strategic interventions for the Plan period. Chapter four documents the implementation and coordination framework of the Plan including organizational structure, staffing levels, financial resource requirements, and risk analysis and mitigation measures. Chapter five provides the monitoring, evaluation and reporting framework of the Strategic Plan; and the key national and departmental performance indicators during the plan period. It also provides the implementation matrix containing the programmes/projects to be undertaken, set targets, expected outputs, performance indicators and budget estimates to implement the plan.

The strategic objectives of the plan are:

1. To conduct innovative research for the Blue Economy;
2. To transfer knowledge and innovative technologies to communities and stakeholders;
3. To mobilize and manage financial and human resources;
4. To strengthen institutional structure and capacity; and
5. To promote local and international collaborations and partnerships.

Key activities to achieve each of the strategic objectives are provided. For each objective, strategies and activities will be undertaken. Further, a new institutional structure has been provided for effective and efficient service delivery.

The Strategic Plan covers the following four Key Results Areas (KRA):

i. Innovative research to support the Blue Economy
ii. Innovative technology developed and transferred to stakeholders
iii. Resources mobilized and institutional capacity developed
iv. Collaboration and partnerships

To implement the Strategic Plan, the resources required over the five-year period will be mobilized through lobbying the Government for additional funding, collaboration with development partners and other stakeholders, utilization of the partnership arrangements, exercising prudence in financial management and establishing income generating activities. The total costs of implementing this plan is KSh.12.763 Billion.

To realize effective implementation of the Strategic Plan, monitoring and evaluation will be undertaken annually. The activities and outputs will be monitored throughout the Plan period and will be mainstreamed to the Directorates on account of responsibility. The outputs will further be mainstreamed in the Institute's annual performance contract targets and Performance Appraisal System (PAS) of KMFRI staff. The Strategic Plan will be evaluated at the end of the plan period.

CHAPTER ONE: INTRODUCTION

1.0 Overview

This section provides a brief background highlighting how KMFRI was established, the Institute's mandate as well as the role KMFRI plays in national development agenda to contribute to the realization of national strategies. It refers to the Constitution of Kenya, Kenya Vision 2030, Third Medium Term Plan (MTP III) of Vision 2030, "Big Four Agenda", Fisheries Management and Development Act 2016, the Medium-Term Expenditure Framework budget, Africa Agenda 2063, and the Sustainable Development Goals (SDGs), among other national and international obligations.

The chapter also presents opportunities and challenges encountered in the development of the Blue Economy sector at the global, regional and national levels. Further, it outlines the rational and structure of the plan as well as the development process that that was undertaken to prepare the plan, including internal and external stakeholder consultations.

1.1 Background

Kenya Marine and Fisheries Research Institute (KMFRI, (hereinafter known as "*the Institute*") is a State Corporation created in 1979 through amendment of the Science and Technology Act (Cap.250 of the Laws of Kenya) that followed the dissolution of the two research-related institutions of the East Africa Community, namely the East Africa Freshwater Fisheries Research Organization (EAFFRO) and the East Africa Marine Fisheries Research Organization (EAMFRO). EAFFRO and EAMFRO were headquartered at Jinja, Uganda and Zanzibar, Tanzania, respectively. The Science and Technology (Amendment) Act was later repealed by the Science, Technology and Innovations Act No. 28 of 2013.

The Institute is under the Ministry of Agriculture, Livestock and Fisheries and it is within the State Department for Fisheries, Aquaculture and The Blue Economy, KMFRI is managed by the Board of Management. The research programmes of the Institute consist of three Directorates namely Ocean and Coastal Systems, Freshwater Systems Research and Aquaculture. The Institute has four Research Centre namely Mombasa, Kisumu, Sagana, and Kegati. The Institute also has six research stations at Naivasha, Baringo, Turkana, Sangoro, Shimoni and a liaison office in Nairobi. KMFRI is ISO 9001:2015 Quality Management Systems (QMS) certified and therefore conforms to international standards on environmental and quality management and relevant national legislations and its research meets international standards.

1.2 Mandate

KMFRI's mandate is to undertake research in "marine and freshwater fisheries, aquaculture, environmental and ecological studies, and marine research including chemical and physical oceanography", to provide scientific data and information for sustainable development of the Blue Economy. The Institute is also mandated to co-operate with other organizations and institutions of higher learning in training programmes and on matters of relevant research.

1.3 Blue Economy sector development challenges

1.3.1 Global Challenges

Globally, marine environment is receiving increasing attention not only because they represent an important source of livelihood and food, but also because of the increasing understanding of their role in global climate regulation. The marine environment supports vast economic activities, and very often a strategic one, in many regions of the world. In many countries, marine based economic activities are a major contributor to GDP and foreign exchange earnings.

1.3.1.1 Over-exploitation and decline of stocks

The demand for resources and services from the marine environment has been increasing over time. The global fish consumption has increased at an average of about 1.5% annually from 9 kg/person/year in 1961 to 20.2 kg/person/year in 2015 (FAO 2016). The increased dependence on capture fisheries has led to over-exploitation of stocks and poor and destructive methods of fishing. Fish productivity depends on the habitats that support them, which in turn are sensitive to climate change effects such as increase/changes in sea surface temperatures, decline in water quality and quantity. These climate change effects can lead to decline in fish stocks and fish production thus compounding the existing pressure on capture fisheries.

1.3.1.2 Unsustainable coastal development

Coastal areas support the largest human settlements as well as economic activities leading the high ecological pressure of coastal ecosystems. According to FAO (2014[1]) and FAO (2016), oceans, seas, coastal areas and the associated blue economy are critical to global and national development. Unsustainable coastal development is contributing to irreversible damage the habitats affecting ecological functions and biodiversity. FAO is promoting "Blue Growth" as a coherent approach for the sustainable, integrated and socio-economically sensitive management of oceans and wetlands.

1.3.1.3 Climate Change

Climate change and ocean acidification are compounding ecosystem degradation at a time when more resources are required to support increasing populations. Thus, climate change is a big threat to sustainable economic development across the globe.

1.3.2 Regional Challenges

The challenges in blue economy development in the region are driven by the need for rapid economic development in the face of population growth, technological advances and climate change. These results in overexploitation of fisheries and other marine resources, pollution,

[1]Food and Agriculture Organization of the United Nations - FAO, (2014). The State of Food and Agriculture. FAO, Rome.

habitat degradation, conflicts in resource. Research is expected to provide information and solutions for sustainable exploitation marine resources.

1.3.2.1 Excessive fishing effort and destructive fishing practices

With the ever-increasing demand for fish resulting from rapid population growth, KMFRI must provide leadership in developing sustainable and economically viable harvesting of inland fisheries, offshore fisheries, aquaculture and mariculture, bioprospecting, post-harvest technology and value addition to support employment creation, food security and income generation. The key challenges confronting capture fisheries in the region include:-

i. Rapidly declining fish catches and revenue occasioned by excessive fishing effort;

ii. Use of destructive fishing gears and methods;

iii. Ineffective management and extension systems;

iv. Inadequate information for decision making;

v. Illegal unreported unregulated (IUU) fisheries due to weaknesses in monitoring control and surveillance, non-effective enforcement of fisheries laws and regulations partly due to inadequate capacity to enforce and limited commitment and involvement of stakeholders in management of fisheries resources and protection of fish habitats.

1.3.2.2 Poor saving culture

There is the challenge of cash economy: the artisanal fishers in the region have a poor saving culture with limited re-investment along the value chain. This results in insufficient capital for investment in the fisheries sector.

1.3.2.3 Fragmented policies for aquatic resources management and development

There are also few specific water body management plans, un-harmonized licensing system for shared water bodies, limited protection of critical habitats, inadequate policy integration and uncoordinated development in the Blue Economy sector and inadequate regional institutional framework for collaboration in some of the trans-boundary water bodies.

1.3.2.4 Pollution of the aquatic environment

The aquatic environments in the region face serious threats from agricultural, industrial and municipal pollution arising from the developments around the basins. Pollution limits the productivity of the aquatic ecosystems and is also a threat to the human health and environmental safety.

1.3.2.5 Aquaculture related challenges

There is high potential for increased investments, employment and increased fish production in the region. However, aquaculture and mariculture development is faced with several challenges limiting the envisioned rapid expansion. Some of the key challenges include high feed costs, limited availability of good quality seed, inadequate technical capacity, inadequate information

on land and water availability, inadequate promotion and support by Governments to stimulate medium and large-scale commercial investments in aquaculture and mariculture, low uptake of commercial aquaculture by the private sector, insufficient commercial aquaculture demonstration business models and inadequate planning for development and expansion of aquaculture.

1.3.2.6 Boundary disputes ï Somalia boundary dispute

The Kenya-Somalia dispute over the maritime boundary in the Indian Ocean to the north of Lamu town, which has been taken to the International Court of Justice is a threat to some of the planned research activities.

1.3.2.7 Unbalanced trade laws ï subsidies by Mauritius and Seychelles

Subsidies provided to the foreign fleets by their home countries make it difficult for Kenya to build up her fishing fleet and compete effectively. Consequently, distant water fishing fleets out-compete the Kenyan national fishers and therefore exploit Kenya's offshore fisheries resources. For a long time, this exploitation of Kenya's fisheries resources occurred without adequate management and enforcement procedures, until the establishment of the Coast Guard which has now been operationalized.

1.3.2.8 Cross-cutting challenges

Cross-cutting challenges include:

i. Piracy and gear thefts,

ii. Non-viable alternative livelihoods,

iii. Diseases like HIV and AIDS and other water borne diseases, and attrition through death of old fishermen and the younger generation not interested in the sector.

1.3.3 National Challenges

In Kenya, like the rest of developing countries, the Blue Economy sector continues to play important role in the social and economic development of the country. Currently, the fisheries sector is a major source of rural employment which is in line with the government policy of curbing rural-urban migration. Over 1.2 million Kenyans depend on the sector directly or indirectly as source of livelihoods, employment and other economic sustenance (Kimani et al., 2018[2]). The sector also provides fish to nearly eight out of every ten households in the country. The demand for fish as food has increased over the years, especially in traditionally non-fish-eating communities. The per capita fish consumption in Kenya stands at 4.6 kg/person/year (Kimani et al., 2018). This is relatively lower compared to Africa where the average fish consumption stands at 10.1 kg/person/year (FAO, 2016).

[2]Kimani, E. N., Aura, M. C., Okemwa, G. M (eds.) (2018). The Status of Kenya Fisheries: Towards the sustainable use of renewable aquatic resources for economic development. Kenya Marine and Fisheries research Institute (KMFRI), Kenya. 177 pp.

Kenya's Blue Economy sector development faces a number of challenges that require appropriate action. These challenges include but not limited to the following: -

1.3.3.1 Declining fish stocks

Fish stocks in some Kenyan inland water bodies and shallow inshore waters of the Indian Ocean have been declining over time as stated earlier due to overexploitation owing to excessive increase in fishing effort; destructive fishing practices; pollution, inadequate enforcement of regulations and environmental degradation.

1.3.3.2 Limited domestic capacity for deep sea fishing

The artisanal fishers in the marine waters have concentrated their fishing activities in the near shore areas using simple gears and vessels due to limited skills and financial resources. This hinders them from venturing into semi-industrial and industrial fisheries in the deep waters.

The tuna and tuna-like species are currently exploited by Distant Water Fishing Nations (DWFN) that do not land their catches in Kenya thus, denying the country employment opportunities, income, food, revenue and raw material for the fish processing industry. Further, there is inadequate domestic investment in deep sea fishing. In line with FAO's Port State Measures Agreement (PSMA) which was ratified by Kenya to prevent, deter and eliminate Illegal, Unreported and Unregulated (IUU) fishing, the current Fisheries Management and Development Act, 2016 requires all DWFN to land at least 30% of their catch in Kenya. However, notwithstanding the fact that we have a new fishing port development at Liwatoni, Mombasa, there is limited capacity (skills and infrastructure) to handle the projected landings.

1.3.3.3 Low aquaculture development

Kenya enjoys a competitive advantage for aquaculture in terms of access to diverse fresh and marine water resources that include ocean waters, springs, wetlands, rivers, water reservoirs and other temporary water bodies. The country's vast water system and diverse climatic conditions favours the farming of a wide variety of cultured fish species and can be used for large scale production. The potential area for fish farming stands at 1.4 million hectares of which only 2 % (about 55,000 hectares) (Macharia et al., 2010[3])is utilized. This has largely been attributed to inadequate supply of certified quality fish seeds (fingerlings) and low cost-high quality feeds as well as exorbitant transport cost of inputs for the smallholder fish farmers. Apart from these, poor aquaculture extension service delivery due to inadequate funding has led to poor information dissemination and slow adoption of appropriate aquaculture technologies. Other impediments include inadequate management skills, technical know-how and access to reliable and timely information despite the recent dramatic growth in the telecommunication and mass media. The above challenges have resulted in continued stagnation of aquaculture development in Kenya despite the existence of potential and favorable macro–economic and environmental conditions for growth on one hand such as the Economic Stimulus Programme (ESP).

[3]Macharia, S., Onganda, H., Wamubeyi, B. (2010). National Aquaculture Suitability Report. Ministry of Fisheries Development, Republic of Kenya. 31pp.

1.3.3.4 1 Pollution of the aquatic environment

The aquatic environments in the region face serious threats from agricultural, industrial and municipal pollution arising from the developments around the basins. Pollution limits the productivity of the aquatic ecosystems and is also a threat to the human health and environmental safety.

1.3.3.5 Inadequate marketing and value-chain infrastructure

The fishermen and fish farmers are compelled to sell their fish at prices dictated by the buyers as they fear the high post- harvest losses. Lack of well-developed marketing facilities, un-functioning supply chains and market information systems both in rural and urban areas have caused distortions. In addition, inadequate marketing and value-chain infrastructure particularly an undefined cold and dry chains are an impediment to fisheries development and growth in the country. This reduces the bargaining power of the fish producers as fish is highly perishable.

1.3.3.6 Low value addition

The bulk of Kenya's fish and fishery products are usually marketed without much value addition due to low investments in micro-processing occasioned by among other factors, limited access to capital, electricity especially in the rural areas and limited adoption of appropriate technologies for new product development and uptake of the new fisheries products. Therefore, the fishers are not benefiting from increased income that is associated with value addition.

1.3.3.7 Limited access to credit and insurance

Access to affordable credit is critical in ensuring increased production and productivity from capture fisheries and fish farming enterprises. Among the constraints limiting production, especially among small-scale fish farmers and fishers is access to tailor-made credit to finance procurement of inputs and capital investment such as pond construction, fishing gear and value addition technologies. There are inadequate insurance packages to cushion the fishers and fish farmers' investments against losses.

1.3.3.8 Fragmented Policy Framework

Despite the fact that the National Oceans and Fisheries Policy, 2008 is in place, there is need for more specific Blue Economy and fishery specific sub policies for clarity in the management and development of the specific fisheries. Blue Economy has brought together players from different institutions with diverse policies that have not been harmonized. In this regard, the Fisheries Management and Development Act, 2016 and the revised National Oceans and Fisheries Policy, will greatly contribute to better management and development of the fisheries sector. Other fragmented policy frameworks exist as aquaculture guidelines and freshwater policies.

1.3.3.9 Maritime Security

Research and maritime activities have been hampered by insecurity in the Kenyan water bodies. This has come up as a result of conflicts in resource use. Improper planning and use of lake space e.g., for cage culture has resulted into conflicts between fishers and farmers.

1.3.3.10 Cross cutting issues

The high incidence of HIV and AIDS among the fisher communities exerts pressure on capture fisheries arising from increased dependence on the open access resources. It leads to reduced productivity, inability to venture into deep waters thus concentrating fishing effort in the near shores. It also affects the co-management structures already in place in addition to loss of fishing skills passed on through apprenticeship.

Alcohol, drug and substance abuse affect the health of people thereby reducing their productivity and may affect output from the fisheries sector. Alcohol, drug and substance abuse may also lead to use illegal fishing methods to get funds to buy the drugs. There is the challenge of fishers having a poor saving culture with limited re-investment along the value chain.

1.4 Role of KMFRI in the National Development

The role of KMFRI is to contribute to the realization of national strategies of food and nutrition security, poverty alleviation, clean environment and creation of employment as provided for under Third Medium Term Plan (MTP III) of Vision 2030, "Big Four Agenda", National Oceans and Fisheries Policy 2008, Fisheries Management and Development Act 2016, Africa Agenda 2063, Africa's Integrated Maritime Strategy-AIMS2050 and the Sustainable Development Goals (SDGs).

To achieve the aforementioned and to promote Blue growth, KMFRI has identified strategic research on:

(i) Economic valuation of marine and coastal resources;
(ii) Development of appropriate post-harvest technologies, value addition, marketing and techniques for sustainable exploitation of national fisheries resources;
(iii) Identification, assessment of the potential, and enabling access to new and under exploited stocks, especially in Lake Turkana, the offshore pelagic and deep water fisheries;
(iv) Development of environmental friendly fishing technologies and to allow access to deep water fish stocks;
(v) Development, improvement and transfer of adaptive aquaculture and mariculture technologies for production and management of quality fish feeds and seed;
(vi) Adaptation of indigenous knowledge and livelihood enhancement;
(vii) Monitoring and Evaluation of the integrity of the aquatic ecosystems (critical habitats), for restoration and sustainable fisheries and aquaculture development;
(viii) Climate change and physical oceanographic processes monitoring and development of bathymetric maps;
(ix) Marine geology and marine spatial planning; and
(x) Riverine ecosystems, satellite lakes and dams.

On regional and global fronts, KMFRI serves as the Focal Point for the Global Oceans Observing System (GOOS), The Global Sea Level Observing System (GLOSS), Joint Technical Commission for Oceanography and Marine Meteorology (JCCOM) and UN's Regular Process on Assessment of State of Global Oceans all advocating for sustainable oceans, the Ocean and Bio-geographic Information System, The National Oceanographic data Centre, among others. The institute has been awarded a Centre of Excellence recognition by the East African Summit of Heads of State. For these reasons, KMFRI has obligations to collaborate in data sharing, archiving and dissemination.

1.5 Rationale for the Strategic Plan 2018 - 2023

This Strategic Plan was informed by the need to:

a) Align the Strategic Plan to the MTP III framework in order to capture the National Development Priorities and emerging issues in the Blue Economy such as a clean safe environment, sustainably managed natural resources, pollution control, access to clean water, sanitation and health concerns, exploration and prospecting of offshore mineral resources and climate change;
b) Harmonize the Institutes' strategies with the "Big Four" agenda;
c) Take advantage of the existing opportunities and tackle the complex challenges to exploit the blue growth potential;
d) Align to the Fisheries Management and Development Act 2016, Africa Agenda 2063 and United Nations (UN) Sustainable Development Goals (SDGs); and
e) Comply with Article 68 (2) part (g) of the Public Financial Management Act, 2012 that requires an Accounting Officer for a national government entity to prepare a Strategic Plan for the entity in conformity with the medium-term fiscal framework and fiscal policy objectives of the National Government.

1.6 The development process of the Strategic Plan (2018-2023)

The draft Strategic Plan (2018-2023) was prepared in February, 2020 by a technical committee drawn from the relevant Directorates and Sections of the Institute. The draft was circulated to relevant stakeholders for their comments and inputs. A draft final Strategic Plan was produced after incorporating inputs from stakeholders. The final Strategic Plan (2018-2022) was deliberated and approved by the KMFRI Board of Management in September 2020.

1.7 Structure of the Strategic Plan 2018- 2023

The Strategic Plan 2018 - 2023is structured into five (5) chapters:

i) Chapter One gives the overview and background information on the Institute that includes: theInstitute's mandate; fisheries sector development challenges at the global, regional and national levels; role of the Institute towards Kenya's development agenda; rationale for the Strategic Plan; the development process of the plan; and the structure of the plan;

ii) Chapter Two provides a review of the Institute's Strategic Plan 2016-2020, in terms of achievements, challenges and lessons learnt. The chapter also presents the Political, Economic, Social, Technological, Environmental and Legal (PESTEL) analysis; Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis; and the stakeholders' analysis;

iii) Chapter Three gives the strategic focus areas, strategic objectives and the strategic interventions for the Plan period. To efficiently deliver on its mandate and increase visibility, the Institute identified six strategic objectives, as follows:

   a) Conduct innovative, demand-driven research in the blue economy,
   b) Transfer innovative technologies to stakeholders,
   c) Increase community participation and promote outreach programs,
   d) Mobilize and manage financial and human resources to implement KMFRI's core functions and develop research infrastructure,
   e) Strengthen institutional structure and capacity; and
   f) Promote local and international collaboration and partnerships;

iv) Chapter Four documents the implementation and coordination framework of the Plan including organizational structure, staffing levels, financial resource requirements, risk analysis and mitigation measures; and

v) Chapter Five provides the monitoring, evaluation and reporting framework of the Strategic Plan; and the key national and departmental performance indicators during the plan period. It also provides the implementation matrix containing the programmes/projects to be undertaken, set targets, expected outputs, performance indicators and budget estimates to implement the plan, as contained in Appendix 5.

CHAPTER TWO: SITUATION ANALYSIS

2.0 Overview

The Strategic plan 2016-2020 had seven (7) strategic objectives. These strategic objectives addressed four (4) key result areas centred on research and innovation; technology transfer and community outreach; resource mobilization and capacity building; and collaborations and partnerships. Most of these targets were monitored through defined output indicators.

2.1 Review of the previous Strategic Plan, 2016-2020

2.1.1 Milestones, achievements and impacts

During implementation of the Strategic Plan of 2016 to 2020, the Institute recorded key milestones. These include:

	Milestone	Achievement	Impacts
	Strategic Objective 1: To conduct innovative, demand-driven and relevant research in aquatic ecosystems		
i.	8 species of commercial value brought under Aquaculture	The research brought three new species into culture (Marine tilapia, *Barbus* sp., Baringo tilapia)	The species are currently farmed in the coastal area and in arid and semi-arid areas where there were challenges of getting enough fingerlings for stocking thus improving fish production and food security
ii.	8 diets of fish feeds formulated, tested and certified	Different ingredients were used to formulate 4 fish diets. The diets are 1. Copra-based fish feed (Coast Region), 2. Black soldier fly larvae (BSF) based diet, 3. Hydrolyzed feather meal diet 4. A combination of plant-based protein sources (soya, cotton, and sunflower cakes). Also, one Fish feed extruder was acquired and operationalized for producing commercial fish feeds	Feed diets are used by farmers to enhance fish growth and production
iii.	Electronic marketing application tool revamped (EFMIS);	Three (3) improved data collection sheets, capacity building of EFMIS staff, provision of EFMIS and monthly bulletins	Improved fish prices for the fishermen and accessibility of fish-to-fish traders
iv.	11 key breeding	Thirty-three (33) breeding areas	Improved management of

	Milestone	Achievement	Impacts
	habitats and associated biodiversity assessed and mapped	mapped in Lakes Victoria (13), Baringo (6), Naivasha (4) and Turkana (10)	fisheries resources
v.	6 stock assessment surveys in water bodies spatially and temporally established	Five (5) stock assessments done of key commercial marine fisheries (Prawn, lobster, small pelagic, two tuna species and two demersal species)	Management plans and policies established that have guided investment into the fisheries sector
vi.	Offshore oceanographic research surveys conducted extending to the EEZ	Four (4) offshore oceanographic research surveys conducted extending to the EEZ using RV Mtafiti	The biomass of fish has been estimated that guides investment into the EEZ, mapping of the sea features has shown potential fishing zones for commercial investors
	Develop bankable proposals and lobby development partners	Twenty-seven (27) research projects funded	Increased funds for research A number of research disciplines have been studied and new data and information availed, enhanced Institutional visibility nationally, regionally and internationally
	Strategic Objective 2: To disseminate research information and innovative technologies to stakeholders		
	KMFRI's corporate image enhanced 100%	KMFRI achieved 73% level of customer satisfaction enhanced through shared technical reports, briefs and fact sheets with stakeholders;	Enhanced service delivery
	Enhanced collaboration with KeFS and stakeholders in 17 programmes and projects development and implementation	Ten joint programs and projects developed and implemented in close collaboration with County governments, SDFA-BE and other stakeholders;	Upscaling of innovations and technologies undertaken, citizen science enhanced, collaborations strengthened
	Community sensitization and outreach activities conducted among	To disseminate research findings, a total of 6 community sensitization workshops and 12 outreach activities were	Adoption of research findings was enhanced and the potential of blue economy well-articulated.

	Milestone	Achievement	Impacts
	aquaculture farmers, fishers, community conservation groups	undertaken. They involved aquaculture farmers, fishers, community conservation groups, government agencies information sharing through media platforms	
	160 scientific publications produced	124scientific publications produced. Books generated: RV Mtafiti book and National Mangrove Management plan developed and shared with KFS, finalized and launched, State of the coast report finalized and shared with NEMA, Status of aquaculture and status of fisheries finalized.	¶ Resources sustainably managed, ¶ New investment opportunities identified ¶ Food security enhanced ¶ Resource managers well informed
	Strategic Objective 3: To undertake research on promotion of investments in the Blue Economy		
	4 bio-active compounds identified and characterized from the aquatic organisms	Two (2) bioactive compounds identified and characterized from fresh water i.e. blue –green algae (Cyanobacteria), and fish oil in making wound-healing agent and soap	Developed bio prospective research unit
	3 innovations established to sustainably exploit our ocean resources for national development	Four (4) innovations established. Fish Aggregating Devices (FADs), Dropline, Turtle Excluder Devices (TEDs), Ocean cage farming technologies developed.	Livelihoods enhanced, conservation enhanced through TED
	Strategic Objective 4: To increase community participation and promote outreach programs		
	Developed status reports on socio-economic status of fisheries dependent communities	7 status reports on socio-economic status of fisheries dependent communities developed in L. Victoria, one report for L. Naivasha, One report for L. Baringo, 4 reports from the Coast region	The information contained in these report have been used to increase participation of communities in management of fisheries resources.
	5 market opportunities for fisheries products identified	Opportunities in export market for farmed species (seaweed and farmed mud crab) identified	Increased earnings from mud crab farming and fishing
	3 economic valuation studies for	4 economic valuation studies undertaken. Two economic and	True value of Lake Victoria fisheries and Kenyan Indian

	Milestone	Achievement	Impacts
	aquatic resources undertaken	financial impact assessments undertaken: one on Lake Victoria fisheries and another on artisanal marine fisheries	Ocean artisanal fisheries used in planning development in the sector
	Development of recipes, piloting the products in the markets, technical reports	Development of four (4) recipes (skewers, fish pie, fish sausages, fish fingers) and fish filleting;	An improved value addition and marketing chain
	Techniques for reduction of post-harvest-losses-and value Addition-developed and-transferred	One new hybrid windmill-solar tunnel dryer developed	Post-harvest losses reduced
	Conduct 5 open days, customer feedback fora, and field days	Two (2) KMFRI open days held in Mombasa	Enhanced visibility
	Supply improved seed to fish breeding centres within suitable aquaculture counties	Supplied improved fish seed to 15 Counties.	Availability of quality fish seed to farmers
	Strategic Objective5: To mobilize financial and human resources to implement KMFRIôs core functions and develop re		
	Raise revenue of Kshs 6,842 million over the 2016 – 2020 strategic plan period.	Raised revenue of KShs 3,981 as at 30 June 2018, which as at the 60% of the plan period.	The institute funded her research activities and improved research facilities.
	Review human resource management policies and practices to better cater for the institute's human resource.	Reviewed the Scheme of Service to align cadres to respective competence requirements. A rewards and sanctions policy was enacted to empower the institute to better manage human resource performance.	Better committed staff as a result of clear career progression. Performance was improved as a result of clarification of the relationship between performance and rewards / sanctions.
	Improve staff	Recruitment of key professional	Service delivery was

	Milestone	Achievement	Impacts
	competence through recruitment, placing and training.	staff; 1 Supply Chain Management, 1 Audit, 1 Planning, 1 Corporate affair, 7 Researchers, 2 Human Resource Management. 15 senior managers trained on Senior Management Course, 20 Drivers trained on defensive driving and first aid, 1 on Strategic Leadership Development Programme; 4 secretaries, 4 fisheries observers, ISO Records Management and M&E training and other International Courses	enhanced with better response and improved efficiency in services delivered.
	Equip centres with necessary laboratory equipment, research vessels and vehicles	RV Mtafiti vessel and 3 laboratories equipped and staff capacity-built	Increased scope of research activities and improved research outcomes.
	Establish hatcheries to support development of the Blue Economy	Four hatcheries were constructed and operationalized – Sagana, Kegati, Sangoro, Mombasa and Shimoni	Enhanced fish seed and breeding research. Enhanced outreach to fish farmers through availability of more and better quality fish seed.
	Equip all centres with necessary research vessels and vehicles	Four research boats procured and operationalized Six research vehicles procured and deployed	Enhanced capacity and scope of research activities.
	Formalized land acquisition for research centres.	Land title deed obtained for Shimoni Mariculture Centre Construction of the National Mariculture Research Center in	Enhanced coverage of research mandate and contribution to the Blue Economy.

	Milestone	Achievement	Impacts
		Shimoni has commenced	
	Strategic Objective 6: To strengthen institutional structure and capacity		
	Equip all centres with necessary laboratory equipment, research vessels and vehicles	Four (4) research boats and 3 laboratories equipped and staff capacity-built	Enhanced research capacity
	Establish hatcheries to support development of the Blue Economy investment	The Institute constructed and constructed and operationalized 4 hatcheries. The hatcheries were established at Sagana, Kegati, Sangoro and Mombasa	The hatcheries are utilized to supply fingerlings to freshwater fish to farmers across the country. Also technical support was provided to farmers by scientists while monitoring performance of the seed
	Approved proposed management structure	Management structure /Organogram approved by the Board	Improved management
	Proposed management Structure implemented 100%	Of the 21 positions in the organogram 13 have been filled substantively	Improved performance
	Formalized land acquisition for all centres	Land title deed obtained for Shimoni Mariculture Centre	Construction of the Mariculture Centre to be initiated without hurdles
	100% developed and implemented Monitoring and Evaluation policy	M&E unit established. Monitoring and Evaluation policy developed, and M&E plan developed	Efficiency, effectiveness and sustainability realized in the implementation of research and development projects
	Strategic Objective 7: To promote local and international collaboration and partnerships		
	10 partnerships/linkages established	1. Shinan County, Jeonnam, South Korea MoU signed on 24/8/2018 (2018/2019 2. Research Centre for Environmental Economics, Heidelberg University MoU signed 25/1/18 (2017/18); 3. Innovation & Leadership for Performance Ltd (ILP-Cop Ltd) Quebec City, Canada signed 25/9/2017 (2017/18); 4. Kisii University MoU signed	Increased funding for research.

	Milestone	Achievement	Impacts
		12/7/2017 (2017/18) 5. Marine Institute of Ireland Signed 8/11/2017 (2017/18) 6. Educators without borders of South Korea signed on 2/11/2018 7. World Vision Kenya, Homa Bay Area Programme, signed in May 2019 8. Centre of Ecology and Hydrology (CEH) of UK signed on 25/4/2018 9. Research Centre for Environmental Economics, Heidelberg university, signed 27/11/2018 10. Cornell University, USA, signed 31/1/2019 11. ICIPE signed 4/4/2019 12. Jomo Kenyatta University 13. Maseno University 14. Pwani University 15. Technical University of Mombasa	

2.1.2 Shortcomings/Challenges

a) High staff turnover;

b) Inadequate staff in some areas;

c) Inadequate infrastructure for conducting research;

d) Limited financial resources due to inadequate allocation and unexpected budget cuts which affects the implementation of the planned projects;

e) Inadequacies in existing policies in areas such as incubation, and sharing proceeds of commercialised patents;

f) Some projects are tailored towards donors' needs;

g) Inadequate Monitoring and Evaluation (M&E) framework to offer checks and balances for implementation of activities;

h) Weak linkages with related development plans at county, national, international levels;

i) Low uptake of research findings by key stakeholders for cascading to end-users;

j) High work load in some department technical knowhow and skills to accomplish tasks with precision; and

k) Inadequate visibility of the Institute.

2.1.3 Lessons Learnt

a) Staff management and succession planning needs to be strengthened and managed professionally to fill existing gaps in the establishment;

b) Need to strengthen and cascade the M&E unit to continuously monitor the implementation of the strategic plan;

c) Upon completion, the strategic plan needs to be communicated to all staff and key stakeholders to enhance its ownership and implementation;

d) Continuous lobbying for increased funding;

e) Annual work plans and budgets should be derived from the strategic plan to enhance the seamless implementation of the strategic plan;

f) Need to enhance visibility of the Institute through increased linkages with the County Governments; and

g) The Institute should enhance the diversification of her income to support research and development.

2.2 Environment Scan

2.2.1 Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis

The SWOT analysis is a strategic planning tool used to evaluate the strengths, weaknesses, opportunities, and threats that face an organization. The tool involves identifying the internal factors (strengths and weaknesses) and external factors (opportunities and threats) that are either favourable or unfavourable towards achievement of the set objectives. Strengths are characteristics (such as capabilities and resources) of the Institute that give it competitive advantage over others. Weaknesses are internal characteristics that place the Institute at a disadvantage relative to others (or in relation to set objectives) and must therefore be minimized to enable achievement of set objectives. Opportunities are external factors which give KMFRI a chance to enhance its ability to meet set objectives. Threats are external factors in the operating environment that reduce KMFRI's likelihood of meeting its objectives and should therefore be mitigated. The successful implementation of KMFRI's mandate will depend on the handling of the internal and external factors as identified in Table 1.

Table 1: SWOT Analysis

Strengths	**Implications**
Unique mandate to conduct research on marine and freshwater fisheries, aquaculture, environmental and ecological studies, and marine research	¶ Strategic position and competitive advantage to attract research funding for sustainable exploitation and management of aquatic resources

including chemical, geological and physical oceanography	
Well trained and experienced research and technical staff	¶ Development of revolutionary technological innovations ¶ Production of high-quality data and information ¶ Building human resource capacity ¶ Increased fundraising capacity ¶ Recognition of papers by our researchers in major international journals
Clearly defined research programmes with good research facilities	¶ Adequate capacity to address multidisciplinary aquatic research activities
Availability of oceanographic research vessel (RV Mtafiti), and RV Uvumbuzi, and other research vessels	¶ Enhanced research to generate reliable data and information for Blue Economy investments ¶ Improved deep sea research ¶ Attraction of National, Regional, and International collaborators ¶ Revenue generation
Strong network of national, regional and international collaborators and partners	¶ National and international recognition and support for research
Strategic location of KMFRI centres and stations at major water bodies in Kenya	¶ A good coverage of major Kenyan aquatic systems ¶ Close collaboration with communities around the major aquatic systems in Kenya
Significant role of KMFRI researchers in developing Kenya's Blue Economy blueprint	¶ Strategic synergies with other Blue Economy players in Kenya
Weaknesses	**Implications**
Weak Staff establishment scheme and Succession Management structure	¶ Gaps in the staff establishment ¶ Staff stagnation in same cadre ¶ Low staff morale ¶ High staff turnover
Insufficient staff to address institutional needs	¶ Inability to address all research needs
Inadequate outreach and	¶ Low impact of community livelihoods

dissemination of KMFRI research outputs	¶ Low visibility of KMFRI
Lower remuneration compared to similar institutions	¶ High staff turnover ¶ Low return on staff development costs
Inadequate financing from the Exchequer	¶ Inadequate funding for research work
Fragmented database and information systems	¶ Delays in the performance of research ¶ Duplication of data generation effort
Lack of historical data and information	¶ Limits research on emerging issues (e.g., Climate change)
Inadequate branding	¶ Limited visibility to stakeholders
HIV/AIDS pandemic	¶ Reduced performance and service delivery
Alcohol, Drug and Substance Abuse	¶ Reduced productivity
Opportunities	**Implications**
Increased focus on the Blue Economy	¶ Increased support to the institute in information generation for the sustainable exploitation of the Blue Economy
Increased demand for fisheries and other aquatic resources	¶ Need to explore and exploit untapped fisheries and other aquatic resources ¶ Increased demand for data and information on effective aquaculture ¶ Increased demand for certified fish seed and feed
Recognition of fisheries as an important economic sector in the Vision 2030, MTP III and STI for knowledge to inform development	¶ Increased support for the institute to generate information for sustainable utilization of fisheries resources for income generation, food security and employment creation
Recognition of climate change as a national challenge in Vision 2030	¶ Collection and collation of data and information the identification of of climate change effectsand their effective mitigation
Increase in number of dams and water reservoirs	¶ Generation of information on the sustainable exploitation of the generated aquatic resources
Increased interest and training in aquatic fields	¶ Blue Economy literacy and awareness programmes

Unexploited potential in some lakes, rivers and dams	¶ Research expeditions to inform fisheries status
Unexploited aquaculture potential	¶ Expansion of aquaculture research and, investments to contribute to the Big Four Agenda on to food security
Unexplored resources in the Exclusive Economic Zone (EEZ)	¶ Expansion of research frontier and increased contribution of the Blue Economy to GDP from minerals, oil and gas, fisheries and offshore tourism
Modern technologies in research	¶ Application of new technologies in research ¶ Ability to handle emerging issues rapidly in aquatic research
Presence of regional and global bodies that have interests in research	¶ Collaboration with regional and global bodies in different countries to bench-mark research and development
Enabling political environment	¶ Increased support from both national and county governments
Threats	**Implications**
Competition from public and private research entities	¶ Loss of experienced staff ¶ Potential loss of mandate ¶ Limited funding from the Exchequer
Increase in complex compliance requirements by potential research partners	¶ Missed opportunities to collaborate with research partners
Insecurity and terrorist attacks	¶ Reduced research in the deep sea, some parts of Lakes Baringo and Turkana
Historical movement of the fisheries sector to different ministries	¶ Issues of fisheries not clearly articulated ¶ Loss of institutional memory
Plagiarism and theft of other intellectual property	¶ Lost opportunities to build the institute's image, commercialize patents and grow networks and collaborations
Lack of continuity plan in case of an emergency involving key research infrastructure including the oceanographic research vessel	¶ Inability to realize the mandate ¶ Loss of data ¶ Idle capacity ¶ Restriction of research scope

2.2.2 Political, Economic, Social, Technological, Environmental and Legal (PESTEL) analysis

The analysis was done in the context of the PESTEL factors and their strategic implications and responses. The analysis is presented in Table 2 below.

Table 2: Political, Economic, Social, Technological, Environmental and Legal (PESTEL) analysis

Political Factors		
Factor	**Strategic Implication**	**Strategic Response**
Political goodwill and Stability	¶ Conducive environment for research ¶ Support from the County Governments ¶ Favourable policies supporting Blue Economy ¶ Goodwill from relevant Ministry, Departments and Agencies (MDAs)	¶ Extension and Outreach programs to be enhanced ¶ Strategic partnerships with County Governments ¶ Increased research and resource mobilization for Blue Economy ¶ Improved working environment and better output
Devolution as provided by the Constitution of Kenya 2010	¶ Opportunities for collaboration and mobilization of resources ¶ Integration of CIDPs in the National Research Agenda	¶ Develop strong engagement plans with county governments ¶ Develop targeted programmes to address County Government priorities
Prioritization of the Blue Economy by the National Government	¶ Increased prominence of KMFRI as the driving institute	¶ Take a lead role in planning for the Blue Economy ¶ Increase collaborations with other players in the Blue Economy ¶ Provision of scientific data and information for policy decisions
Favorable global political agenda for emerging issues such as climate change, international disputes under	¶ Availability of financing from international organizations for relevant global issues of concern	¶ Develop research proposals and collaborations in relevant global issues ¶ KMFRI would front itself

UNCLOS and Piracy	¶ Increased awareness and sensitization on emerging global issues	to contribute to the global issues
Economic Factors		
Factor	**Strategic Implication**	**Strategic Response**
Projected economic growth from investments in the Blue Economy	¶ New opportunities for businesses, training and research ¶ Demand for Blue Economy space andinvestments	¶ Contribute data and information for the development of Marine Spatial Planning ¶ Enhance collaborations and linkages for research to address opportunities and investment in the Blue Economy
Research funding	¶ Increased research in the Blue Economy	¶ Increased lobbying for the GOK to support research as a driver of investments in the Blue Economy ¶ Partner with strategic collaborators and donors for research funding ¶ Public Private Partnership (PPP)
Kenya Vision 2030	¶ Increased utilization of EEZ resources ¶ Increase aquaculture production ¶ Reduced fish post-harvest losses	¶ Acquisition of appropriate technologies to exploit EEZ resources ¶ Public Private Partnership (PPP) ¶ Develop appropriate technologies ¶ Develop resource maps
Integration (East African Community, COMESA, IGAD)	¶ Enhanced opportunities for collaborative research ¶ Opportunities for larger market ¶ Reduced cost for doing business ¶ Free cross boarder movement	¶ Integration of research in to EAC protocols ¶ Enhanced sale of value-added products

	¶ Common platforms for doing business	
Post-harvest fish losses	¶ Food insecurity and economic loss	¶ Develop innovative technologies to reduce fish post-harvest losses ¶ Formulation of value-added products
Social Factors		
Factor	**Strategic Implication**	**Strategic Response**
Indigenous Knowledge	¶ Need for research in indigenous knowledge ¶ Create opportunities to use, develop and improve technologies that are appropriate to the various communities	¶ Documenting, validating, and protecting the indigenous knowledge and technologies ¶ Provide opportunities to utilize the knowledge research process. Liaise with relevant MDAs to safeguard Bio-cultural heritage ¶ Dissemination of information on indigenous knowledge
Diseases	¶ Reduced productivity of human resource ¶ Lost opportunities	¶ Promote awareness and access to medical care for staff
Cultural Diversity	¶ Tapping of indigenous knowledge to support management of the Blue Economy resources ¶ Demand of fish food ¶ Affects investment in fisheries industry	¶ Value addition to promote fish consumption ¶ Provision of data and information for sensitization on fish food diversity
Alcohol, Drug and Substance abuse	¶ Social degradation and reduced productivity	¶ Engage staff and stakeholders, create awareness, and mainstream counseling and rehabilitation for staff

Rapid population growth	¶ Demand for research on alternative livelihoods ¶ Reduced employment opportunities ¶ Decline in capture fisheries in artisanal fishers	¶ Develop Blue Economy technologies and programmes that create employment and improve food security ¶ Promote Value-addition to enhance incomes ¶ Provide data and information to contribute to improved fisheries management
Ethnic diversity	¶ Embrace and enhance cohesion and integration at workplace	¶ Sensitize staff on ethnic harmony ¶ Promote diversity among staff during recruitment ¶ Promote teamwork
Technological Factors		
Factor	**Strategic Implication**	**Strategic Response**
Information and Communication Technology (ICT) and e-resources	¶ Better access to online information resources ¶ Improved avenues for information dissemination ¶ Increased capacity for analysis	¶ Embrace automation and online records management (Enterprise Resource Planning (ERP), E-waste Management and mainstream ISMS) ¶ Promote and upscale the use of KMFRI's Electronic Fish Marketing Information Service (EFMIS) ¶ Promote professionalism in all functional lines through continuous Professional Development (CPDs)
Cyber security risk	¶ Potential for plagiarism ¶ Loss of data ¶ Un-authorized access to data/information ¶ Information security risks	¶ Improve information security system ¶ Training and sensitization on information security ¶ Operationalize the KMFRI ICT Policy ¶ Apply information security

		standards - firewalls, back-ups
Emerging technologies	¶ Inadequate research infrastructure and facilities	¶ Upgrade laboratory equipment and train staff ¶ Adoption of the state-of-the-art research procedures plus equipment and application of biotechnology ¶ Collaborate with relevant institutions
Environmental Factors		
Factor	**Strategic Implication**	**Strategic Response**
Climate change and natural calamities	¶ Destruction of experimental areas ¶ Loss of field sensors and equipment ¶ Loss of field sites	¶ Opportunity for research on climate mitigation and adaptation ¶ Conduct research and disseminate information on Climate Change ¶ Training and sensitization on climate change ¶ Opportunity for mapping of potential natural calamity hotspots in aquatic systems
Tsunamis and storms	¶ Hinder access to field sites ¶ Loss or damage of equipment ¶ Injuries to staff	¶ Opportunity to develop scenario models for extreme events
Legal Factors		
Factor	**Strategic Implication**	**Strategic Response**
The Constitution of Kenya 2010	¶ Changed governance and operational environment including devolution, gender balance, bill of rights, affirmative action, leadership and integrity, and cost of compliance ¶ Public participation has	¶ Alignment of KMFRI operations with the Constitution ¶ Inclusion of gender balance and focus on vulnerable and marginalized communities ¶ Avail information to the public in line with

	empowered and enlightened the citizenry who are demanding effective service delivery ¶ Increased litigations	requirements of the Constitution ¶ Sensitization on constitutional and statutory requirements ¶ Embrace public participation in research and decision-making ¶ Improve services to reduce litigation
Science and Technology Act, Cap 250, repealed by the Science, Technology and Innovation Act No. 28 of 2013	¶ Recognition of KMFRI as a national research institution under section 56, fourth schedule	¶ Review the current legal structures to support the current expanded needs of the Institute
Fisheries Management and Development Act No. 35 of 2016	¶ Provides for consultation between KMFRI and KeFS, KFMA, Fish Levy Trust Fund and other players on matters of research	¶ To align with the provisions of this Law and collaborate with the relevant Fisheries agencies
International and regional conventions treaties and agreements	¶ Obligation to support the Government to comply with these conventions and agreements	¶ Collate and provide relevant information for compliance

2.2.3 Stakeholders Analysis

The stakeholders' analysis was undertaken to identify the internal and external stakeholders that KMFRI collaborates or interacts with for the efficient and effective delivery of services. Table 3 provides the key stakeholders, their expectations, and their potential contribution as well as KMFRI's expectations in the implementation of this Strategic Plan.

Table 3: Stakeholders Analysis

Stakeholder category	**Stakeholder expectations**	**KMFRI ô s e x p e c t the stakeholder**
The National Treasury	¶ Investment information for contribution to GDP and socioeconomic	¶ Resource mobilization, adequate and timely funding and budget

Stakeholder category	Stakeholder expectations	KMFRIôs expect the stakeholder
	development ¶ Prudent management of resources	approval ¶ Public Financial Policy Guidelines
Ministry of Agriculture, Livestock, Fisheries and Irrigation	¶ High standards of professional ethics by KMFRI staff ¶ Accountability and transparency in provision of services ¶ Compliance to statutory obligations ¶ Provision of quality research information to guide policy decisions	¶ Support funding requests ¶ Timely communication ¶ Lobby for additional funding on behalf of KMFRI ¶ Clear definition of mandates ¶ Policy formulation
State Department for Fisheries, Aquaculture and the Blue Economy	¶ High standards of professional ethics by KMFRI staff ¶ Accountability and transparency in provision of services ¶ Effectiveness, efficiency and economic use of resources ¶ Provision of data to guide resource management	¶ Utilization of research findings for resource management ¶ Policy formulation and fisheries management guidelines ¶ Resource management, enforcement and extension services ¶ Provision of catch and export data ¶ Clear information and data requirements
National Commission for Science, Technology and Innovations (NACOSTI) and National Research Fund (NRF)	¶ Partnership and collaboration on research matters ¶ High quality research output ¶ Demand driven research ¶ Prudent utilization of research funds	¶ Overall coordination and advisory role in science and technology development ¶ Research funding ¶ Facilitate with research permits where necessary
Ministries, Departments and	¶ Collaboration in	¶ Collaboration in program

Stakeholder category	Stakeholder expectations	KMFRI ô s e x p e c t the stakeholder
Government Agencies (MDA's)	development and implementation of Blue Economy activities.	development, resource mobilization and law enforcement
Universities (international and national), tertiary training institutions and basic education units	¶ Joint research ¶ Collaboration in curriculum development, ¶ Collaboration in training, research programmes and projects (including student attachment and internships). ¶ Mentorship for basic education units	¶ Capacity building in support of Blue Economy ¶ Collaboration in program development and implementation ¶ Production of quality graduates ¶ Develop quality and relevant academic programmes and curricula
Office of the Attorney General and Department of Justice	¶ Compliance with the law and legal issues	¶ Representation and advice on matters of the law
Law enforcement agencies	¶ Cooperation and compliance on relevant laws and regulations	¶ Safety and security
County Governments	¶ Provision of technical support and capacity building ¶ Support and co-operation when required on matters relating to the fisheries sector and other marine resources ¶ Dissemination of research output to the communities	¶ Provision of land for establishment of stations ¶ Provision of funds for commissioned research to address specific needs ¶ Sharing of county policies, plans and programmes pertaining to utilization of aquatic resources ¶ Upscale developed research technologies ¶ Issuance of permits and other relevant documents
Development partners and financial institutions	¶ Prudent management of funds and other resources ¶ Transparency and accountability ¶ Timely provision of	¶ Technical support, capacity development, funding of research projects ¶ Cooperation in research in Blue Economy sectors

Stakeholder category	Stakeholder expectations	KMFRIôs expect the stakeholder
	required products, information and reports ¶ Generation of data and information to support informed management of marine resources	¶ Regional research coordination ¶ Resource mobilization ¶ International lobbying ¶ Data and Information exchange
Local and international Non-Governmental Organizations	¶ Support the implementation of Regional and International Organizations initiatives	¶ Mobilization of resources ¶ Community mobilization and sensitization ¶ Up-scaling technologies ¶ Advocacy, networking and lobbying
Community-based organizations, Fisheries organizations, Beach Management Units	¶ Technical and logistical support ¶ Efficiency in delivery of services ¶ High standards of professional ethics ¶ Accountability and Transparency in provision of services	¶ Resource management ¶ Community empowerment ¶ Awareness creation ¶ Capacity building ¶ Resource mobilization ¶ Advocacy, networking and lobbying ¶ Partnership in research ¶ Marketing groups ¶ Transfer of indigenous knowledge ¶ Technology adoption ¶ Goodwill ¶ Compliance with management regulations ¶ Information and data sharing
Private sector such as fish processors, feed companies, traders	¶ Provide research output that will address their challenges ¶ Technical support ¶ High standards of professional ethics	¶ Partnership in research ¶ Funding of research, ¶ Adoption of technologies ¶ Compliance with fisheries and other relevant quality

Stakeholder category	Stakeholder expectations	KMFRIôs expect the stakeholder
	¶ Accountability and Transparency in provision of services ¶ Spur growth of blue economy cottage industry	assurance regulations
Regulatory bodies	¶ Collaboration in setting standards and compliance with the set standards	¶ Setting standards ¶ Utilization of research data ¶ Provision of advisory and regulatory services ¶ Enforcement of relevant laws and regulations
Legislative Assemblies	¶ Compliance with the Constitution, relevant policies, laws and regulations ¶ Provision of reliable and timely information/ reports required from time to time (responses on parliamentary questions, and financial and non-financial reports)	¶ Enactment of laws and by-laws ¶ Allocation of research funds ¶ Approval of budgets ¶ Oversight authority
Media platforms i.e. Internet Service Providers (ISPs), Media Houses, printing firms	¶ Receive timely information ¶ Access facts/information	¶ Information Technology (IT) services ¶ Packaging and timely dissemination of information ¶ Awareness creation ¶ Effective coverage and accurate reporting on KMFRI's activities
Maritime Agencies, KMA, Bandari College, KPA, Kenya Coast Guard Service	¶ Compliance with maritime regulations ¶ Provision of reliable and timely information/ reports required from time to time for development	¶ Provision of maritime standards ¶ Capacity building

Stakeholder category	Stakeholder expectations	KMFRIôs expect the stakeholder
	of Blue Economy	
Auditor General	¶ Compliance with financial and audit regulations ¶ Provision of reliable and timely information	¶ Provision of audit guidelines ¶ Conducting regular audits and issuance of opinions and certificates
Controller of Budgets	¶ Submission of annual budget for consideration	¶ Authorizing the Institute's annual budget
Labour relations stakeholders	¶ Support employee welfare ¶ Meet employer obligations	¶ High productivity of staff ¶ Mediation for conflict resolution
Employees	¶ Provision of tools for trade ¶ Conducive work environment ¶ Favourable terms and conditions of service	¶ Commitment to service delivery ¶ Observance of work ethics

CHAPTER THREE: STRATEGIC MODEL

3.0 Overview

This section provides KMFRI's vision, mission, and core values. It also articulates the issues that the institute will address to achieve the strategic objectives for the plan period. Further, it outlines the strategic actions that will be applied.

3.1 Vision, Mission and Core Values

3.1.1 Vision

A Centre of Excellence in innovative research in marine, fisheries and the Blue Economy for development.

3.1.2 Mission

To generate and disseminate scientific information for sustainable development of the Blue Economy.

3.1.3 Core Values

To fulfil her mandate and realize its mission, the operations of KMFRI are guided by the following core values:

vi. Integrity
vii. Transparency and accountability
viii. Professionalism
ix. Teamwork
x. Equity and equality

3.2 Key Result Areas and Strategic Objectives

Four key result areas have been identified based on the institute's mandate and role. Strategic objectives have been formulated for each key result area to be implemented through prioritized actions, as set out in table 4 below.

Table 4: Key Result Areas and Strategic Objectives

Strategic objective / Expected outcome	**Strategies**	**Activities**
Key result area 1: Research and Innovation		
1. To conduct innovative research for the Blue Economy **Outcome:** Improved management and development of aquatic resources for enhanced	(i) Sustainable diversification and commercialization of aquaculture species	a) Establish marine and freshwater hatcheries to breed diverse fish species in Shimoni Mariculture Research Centre; b) Establish and manage gene banks to support domestication of wild-collected seed;

wellbeing		c) Conduct culture studies of high value species such as seaweeds, sea cucumbers, prawns, mud crabs, and ornamental fish; d) Conduct "eat fish" campaigns; e) Develop standards for certification of seed; f) Undertake aquaculture suitability mapping; g) Undertake research for development of in situ aquaculture; h) Stocking and restocking of water bodies; i) Upscale the seaweed models to be adopted for other coastal counties; j) Replicate the Dabaso and Kibokoni farms model to other areas; k) Extraction of agar and other value added products from seaweeds; l) Prospect for other algal species; m) Increase aquaculture production in KMFRI centers to enhance the National fish breeding programme; n) Generate information to guide the development of aquaculture polices and guidelines; and o) Establishment of a Marine Aquaculture Research Centre and a Marine Aquaculture Hatchery to facilitate diversification of aquaculture species.
	(ii) Fish feed formulation and testing	a) Develop and validate KMFRI standardized fish feed formulae for marine and freshwater species; Develop culture protocols for live feeds.
	(iii) Development of innovations and technologies	a) Conduct community-based culture trials in different water bodies using modern climate smart technologies; b) Undertake research on genetic mapping, genomics, forensics of

		potential aquaculture species; and c) Develop fishing gears and technologies to support the Blue Economy.
	(iv) Management and surveillance of fish diseases and bio-security	a) Establish a centre for bio-security and fish disease surveillance; b) Build capacity for monitoring and controlling fish diseases and parasites; c) Establish a Fish Diseases and Environmental Monitoring Unit (FDEMU); and d) Undertake water quality assessment of commercial aquaculture farms including cage farming.
	(v) Sustainable fisheries and food security	a) Conduct catch assessment surveys to document gear impacts and population dynamics of exploited species; b) Conduct cruise surveys to estimate the abundance and distribution of key commercial fish stocks within territorial (marine and fresh water) and EEZ waters; c) Build capacity in quantitative fisheries stock assessment; d) Conduct quantitative fisheries stock assessments using relevant models; e) Establish the species specific biomass of key commercial fish within the EEZ; f) Establish the biology and ecology of key commercial species in the ocean; g) Deploy scientific observers to monitor commercial catches under a national programme; h) Conduct genetic assessments of priority species to determine genetic diversity and population connectivity; i) Conduct trials on ecosystem friendly fishing technologies (such as drop line, fish aggregation devices, pole and line); j) Survey and map fish breeding and

		spawning areas; k) Generate data to contribute to the development of the Ornamental and Recreational Fisheries Guidelines; l) Assess socioeconomic impacts of fishing and other anthropogenic activities including climate change; m) Assess impacts of fish diseases, fish kills and parasites on fisheries productivity; n) Development of International Nile Perch Research Centre; o) Assess the metabolic by-products in various fish in the market; and p) Promotion and development of ornamental fisheries; development and promotion of recreational fisheries.
	(vi) Development of capacity for artisanal fishers to enhance food security and livelihood	a) Train fishers on sustainable resource utilization; b) Train fishers on monitoring and data collection; and c) Disseminate research finding to fishers.
	(vii) Development of Fishery Information System	a) Populate fisheries data and metadata; b) Populate the environmental data
	(viii) Value addition on aquatic resources	a) Develop value added products from fish and other aquatic resources; b) Register and patent value addition technologies developed.
	(ix) Oceanographic and limnological research for blue growth	a) Undertake surveys to investigate biogeochemical and hydrological processes, and geological features; b) Establish long-term monitoring of sea level, lake and riverine levels, wetlands and shoreline changes; and c) Develop capacity for the interpretation of seismic data.
	(x) climate change vulnerability assessment	a) Establish baseline information/data on biogeochemical parameters;

	and effects on marine ecosystems	b) Develop models of extreme events to predict impacts on coastal zone management; c) Map high risk venerable areas; d) Conduct research on effectiveness of natural barriers to shoreline protection; e) Conduct surveys in critical aquatic habitats to monitor changes in biodiversity; and f) Establishment of an International Mangrove Research Centre.
	(xi) To conduct innovative research for the blue economy	a) Perform Petro graphic and geochemical analyses of minerals distributed along nearshore Kenyan coast for mineral identification and relative abundance; b) Undertaking a mineral resource mapping survey along the Kenyan coast; c) Mapping to establish characteristics of the unique geological features (Sea Canyons & valleys, Sea Ridges, Seamounts); and d) Establish a research domain to conduct marine bio-prospecting studies in partnership with local and international partners.
	(xii) Assessment and monitoring of pollution in aquatic habitats	a) Conduct surveys to document sources of pollution and identify hotspots; b) Conduct surveys to investigate pollution levels including harmful algal blooms, plastics, heavy metals, POPs and hydrocarbons; c) Conduct environmental assessment surveys to investigate the impacts of cage farms; and d) Conduct surveys to establish ecological footprint of cage culture.
	(xiii) Socioeconomic assessments to inform management of aquatic	a) Conduct socioeconomic studies on aquatic resource users and impacts of anthropogenic activities;

	resources and development of blue economy	b) Conduct economic valuation of marine and coastal resources; c) Conduct cost-benefits analysis of alternative technologies and livelihood sources among aquatic resource users; d) Conduct value-chain analyses of fish and fisheries products; e) Undertake research on livelihoods; and f) Conduct research on indigenous knowledge and gender dynamics, conflict resolution, and special interest groups to inform sustainable development of Blue Economy.
	(xiv) Value addition and marketing of fish and fisheries products	a) Develop value added products from fish and other aquatic resources; b) Develop and upscale use of cost-effective market information systems; c) Undertaking market research and community empowerment in liaison with relevant agencies; and d) Conduct meetings with national, regional and international agencies to enhance marketing of fish and fisheries products.
	(xvi) Cultural and religious values	a) Conduct studies on cultural and religious practices; b) Conduct studies on marine cultural heritage; c) Undertake biophysical and socioeconomic assessments to support marine ecotourism; and d) Conduct studies on Ocean governance in Kenya.
Key Result Area 2: Knowledge Management and Dissemination		

1. To transfer knowledge and innovative technologies to communities and stakeholders ***Outcome:*** *Enhanced knowledge management, dissemination and uptake of innovations*	i. Upscale and promote uptake of innovative technologies and knowledge to communities and stakeholders	a) Establish communications office to translate research findings into policy briefs and guidelines; b) Capacity building on knowledge management; c) Establish demonstration facilities to enhance uptake of technologies (aquaculture demo farms, fish eating campaign etc); d) Generate information, education and communication (IEC) materials (posters, brochures, videos etc); e) Conduct outreach activities for uptake of technology (ASK shows, Open Days etc); f) Review KMFRI research and intellectual property rights policies; g) Develop a publicly accessible institutional document repository; h) Undertaken ocean/aquatic literacy activities through short term trainings (OTGA, MOOCs, Toolkits etc); i) Upscale use of digital online platforms (EFMIS, Observer database, etc); j) Publish and disseminate Kenya *Aquatica* Journal, Blue Book and other publications.
	ii. Improve scientific data archival and dissemination	a) Develop fisheries management information system; b) Develop and integrate databases to inform Blue Economy investments in fisheries and aquatic resources; and c) Develop a publicly accessible institutional document repository.
	iii. Strengthening KMFRI's Corporate Image	a) Rebrand KMFRI (including review of logo, letterhead, choice of media house, among others); b) Brand and package innovative technologies; c) Conduct open days, customer feedback fora, and field days; d) Organize and participate in scientific

		conferences/ awareness workshop; e) Participate in global, regional, national and local events; f) Organize biennial scientific conferences with stakeholders; g) Review and customize the Service Charter; h) Set up and operationalize marine and fisheries aquaria, museums and training centres; and i) Develop and operationalize the Communication policy and knowledge dissemination strategy.
Key Result Area 3: Resource mobilization and institutional capacity building		
1 To mobilize and manage financial and human resources ***Expected Outcome:*** *Increased funding and human resource capacity*	i) Mobilization and management of financial resources	a) Develop a resource mobilization strategy; b) Develop and operationalize an integrated financial and human resource management system; c) Support researchers to develop patentable technologies for Blue Economy; d) Lobby Government to increase budgetary allocations; e) Generate funds through innovative proposals; f) Promote partnerships with the Private Sector; and g) Increase internally generated revenue through sale of products and services.
	ii) Human Resource Planning and Development including succession planning	a) Recruit staff to fill the approved establishment and establish specialties to strengthen the Blue Economy Research and motivate staff for enhanced service delivery; b) Develop and implement KMFRI human resource manual and plan; c) Support the staff pension scheme; d) Develop a staff training plan/ programme;

		e) Develop and implement a Human Resource Master Plan and Annual Human Resource Plans; and f) Develop and implement a succession strategy.
2 To strengthen institutional structure and capacity ***Outcome:*** *Improved service delivery, visibility and institutional infrastructure*	i) Strengthening of institutional structure and capacity	a) Implement the approved organogram; b) Develop and implement a comprehensive performance management system; c) Develop and implement a framework for management of organization assets and infrastructure; d) Develop Bio-security infrastructure to support research; e) Acquire title deeds for all KMFRI centres/stations; f) Establish new research centres in Shimoni (NAMARET)and Tharaka Nithi; g) Acquire additional land for fisheries research in Busia, Laikipia, Kilifi, Kwale, Tharaka Nithi, Lamu, Embu and Taita Taveta counties; h) Develop and implement a Monitoring and Evaluation strategy; i) Develop legislation to enable KMFRI realize the Blue Economy mandate; j) Develop a jetty for RV Mtafiti; and k) Acquire a fisheries research vessel to support Blue Economy research.
	ii) Upgrading of research facilities in existing centres and stations	a) Develop specialized centres of excellence in KMFRI; b) Develop specialized capacity in all centres/stations to address the Blue Economy Research agenda; c) Develop a laboratory for RV Mtafiti and RV Uvumbuzi; d) Establish and operationalize the Molecular Laboratory; and

		e) Establish an International Nile Perch Research Centre in Kisumu.
Key result area 4: Collaboration and Partnerships		
3 To promote local and international collaborations and partnerships ***Outcome:*** *Increased collaboration and partnerships in research and development*	i) Enhance Cooperation and Implementation of National/Regional/International Frameworks and Standards	a) Develop and adopt a shared access regime to research infrastructure in collaboration with partners; b) Establish and maintain collaborations and partnerships in research and development with partners including County Governments and the summer school; c) Promote communication with partners; and d) Identify and prepare a structure for meeting international obligations related to marine and freshwater research to support the Blue Economy.

CHAPTER FOUR: IMPLEMENTATION AND COORDINATION FRAMEWORK

4.0 Overview

KMFRI was established to undertake research on aquatic environment covering both marine and freshwater systems to facilitate sustainable utilization of the blue economy potential. The number of the Institute's research scientists has increased from 2 at inception to 124. The total number of employees stands at 754 against an establishment of 1,362(Appendix 3). During the implementation period, KMFRI will strengthen and reorganize its operations with a view to improving service delivery. KMFRI's infrastructure capacity has also expanded from 2 to 9 research stations/centres across the country with a potential to develop more stations.

The institute has four Research Centres and five Research Stations. The Mombasa Centre coordinates Ocean and Coastal Systems Research in the coastal hinterlands, the territorial waters and the Exclusive Economic Zone (EEZ) (Appendix 6) and has a research station in Shimoni. The Kisumu Centre coordinates research on Lake Victoria and other inland water bodies, with research stations at Lake Baringo, Lake Turkana and Lake Naivasha. The Sagana National Aquaculture Research and Development Centre coordinates aquaculture development in both fresh and marine waters, with a research centre and station in Kegati and Sangoro, respectively. These research centres and stations are shown on the map in Appendix 7.

KMFRI has parcels of land at Kanyakwar, in Kisumu County; Mtwapa, in Kilifi County; Mutonga in Tharaka Nithi County; Rumuruti in Laikipia County; Sisenye Land in Busia County that is a proposed research and training centre; and Nataba in Turkana County, for development of research facilities.

4.1 Structure of the Organization

The successful implementation of the plan will require adequate human and financial resources. It will also require the goodwill and support of the leadership at the Ministry / State Department and collaboration of other stakeholders. The full involvement and total commitment of all the institute's human resource will be crucial.

4.1.1. Current Organogram

The current organizational structure (Appendix 1) is set up as follows:

- Board of Management with the Chairman appointed by H.E The President of the Republic of Kenya and Board members appointed by the Cabinet Secretary.
- The Director who is the Chief Executive Officer (CEO).
- Four directorates namely Ocean and Coastal Systems, Freshwater Systems, Aquaculture and Finance and Administration headed by deputy directors in substantive positions.
- Twelve departments namely Oceanography and Hydrography, Marine Fisheries, Freshwater Fisheries, Limnology, Freshwater Aquaculture, Mariculture, Socioeconomics, Blue Economy, Supply Chain Management, Finance and Planning, Administration and Human Resource Management, Information and Communication

Technology headed by assistant directors. All deputy directors except the assistant directors for Supply Chain Management, Finance and Planning, and Administration and Human Resource are appointed positions.

- Support services namely Audit, Corporate Affairs and Outreach Services, Legal Affairs, Security and KMFRI Enterprises to be headed by chief auditor, corporate affairs manager, legal officer, security officer and enterprise manager, respectively.
- Chief Officers in all departments identified above, and four under Corporate Affairs, Linkages and Outreach Services (CALOS).
- Institute engineer under Finance and Administration directorate.
- In addition, new research centres will be established in the following counties: Kwale (Shimoni), Lamu, Tharaka-Nithi, Homa Bay, Busia, Embu, Kisumu (Kabonyo), Migori (Gogo), Tana and Athi River systems to be headed by Assistant/Centre Directors.

4.1.2. Proposed Organization Structure

The increasing demand for research to guide development of the Blue Economy and address the global challenges such as climate change, dwindling stocks and globalization has expanded the mandate of KMFRI. This expanded mandate required review of the organizational structure and additional capacity to bring efficiency and effectiveness in the delivery of scientific information. The increasing need to have research information effectively address the fundamental social, cultural and economic issues that affect the general citizenry and strengthen research on Blue Economy, has necessitated creation of the Directorate of Socioeconomics. Furthermore, the need to provide for increased professionalism and address the expanding workload in the former Finance and Administration Directorate has provided a pointer towards the creation of the Directorates of Corporate Services, and Strategy, Partnerships, Resource Mobilization. Other Directorate created include Internal Audit and Legal Services. The creation of the Directorates is projected to help the Institute enhance performance, service delivery and professionalism.

Similarly, KMFRI has suffered from poor visibility due to inadequate corporate communication and outreach which has been proposed to be expanded at the specialized centers and stations to improve performance. In addition, the planning and resource development functions are not adequately addressed due to lack of dedicated planners/economists. In this strategic plan, appropriate strengthening of human resource capacity and expansion of infrastructure have been factored. To guide the anticipated expansion and effective management of existing assets, the Institute has put in place a professionally qualified engineer to help hasten this process for prosperity.

The aforementioned has necessitated review of establishment in order for KMFRI to meet its core mandate. The Board of Management has established a new organizational structure (Appendix 2) as follows:

- Board of Management whose Chairman is appointed by H.E. The President of the Republic of Kenya and Board members appointed by the Cabinet Secretary in accordance with the state corporations Act (Cap 446).

- ¶ The Director General (DG) who is the secretary to the Board of Management and Chief Executive Officer (CEO) of the Institute.
- ¶ The Corporation Secretary who is the head of the Institute's Legal Services Directorate and is a member of the Board of Management. The Corporation Secretary who is on contract, reports administratively to the Director General.

Thus, four Directorates in research and two in support services have been factored in the structure. The four research Directorates are Oceans & Coastal Systems and Blue Economy Research, Freshwater Systems Research, Aquaculture Research, and Socioeconomics Research. The two support services' Directorates are Strategy, Partnerships, Resource Mobilization, and Corporate Services. Each of the research Directorates are headed by a Director who is assisted by Chief Research Scientists (CRS). Non-substantive research Assistant Directors (ADs) are to be appointed by the top management to administratively work under the Directors. Each of the support Directorates are headed by Directors. The Directors are assisted by Deputy Directors, who head departments within the Directorates.

The Internal Audit function is under a Directorate headed by a Director who reports administratively to the Director General and functionally to the Board of Management. The Supply Chain Management department is also headed by a Supply Chain Manager who reports to the Director General.

Research Stations are under the coordination of respective Research Centres. Research Centres are administered by Centre Directors (CDs) while Research Stations are administered by Station Coordinators (SC).

Presently, Government institutions are being encouraged to engage in revenue generation to supplement Exchequer funding and KMFRI intends to add value to its assets to realize this opportunity. KMFRI's activities on the other hand have often been impacted negatively by reduced funding and over-reliance on the Exchequer. There is need therefore to strengthen the enterprise unit and have it manned by a qualified entrepreneur in bid to expand the revenue base.

4.1.3 Branding of the KMFRI stations

This has been proposed to enhance and leverage resources, and to centralize expertise and technical support to key areas in the Blue Economy. The branding of the centres is shown in the table 5 below:

Table 5: Branding of Research Centres and Stations

	Centre	**Proposed Name ï Branding the stations based on functionalities**
1.	Mombasa	National Centre for Oceanographic Research
2.	Kisumu	International Nile Perch Research Centre
3.	Sagana	National Aquaculture Research Centre

4.	Kegati	National Fish Feed Research Centre
5.	Turkana	ASAL Fisheries Research Centre
6.	Naivasha	Limnological Research Centre
7.	Baringo	Rift Valley Basin Research Centre
8.	Shimoni	National Mariculture Research and Training Center (NAMARET)
9.	Sangoro	KMFRI Fish Feed Research and Production Centre
10.	Mutonga	Eastern Basin Research Centre
11.	Nairobi	Blue Economy Liaison Centre
12.	Lamu	Northern Kenya Bank Research Centre

4.2 Staff Establishment

4.2.1. Authorised and In-Post Establishment

The institute's staff establishment is as set out in Appendix 3.

4.2.2. Human Resource Development Strategies

KMFRI will continue investing in improving the quality of its human resource through:

- ¶ Implement the KMFRI Human Resource Master Plan;
- ¶ Implement the KMFRI Human Resource Plan and Manual;
- ¶ Recruitment of talented staff;
- ¶ Bringing out the best of them through performance management measures including targeted training; and
- ¶ Providing them with a working environment that motivates synergy, innovation and commitment.

4.3 Financial Resources

4.3.1. Financial Resource Requirements

The projected cost of implementation of this strategic plan is KSh.12,763 million. Table 6 below sets out a summary of the cost projection by Key Result Areas (KRA) and financial year.

Table 6: Financial Resource Requirements

Key Result Area (KRA)	**Resource Requirements**					
	Projected Expenditure (KSh. Million)					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
KRA 1	282	488	641	378	356	**2,145**

KRA 2	158	151	631	91	626	**1,657**
KRA 3	764	1,052	1,727	2,965	2,378	**8,886**
KRA 4	15	15	15	15	15	**75**
Total	**1,219**	**1,706**	**3,014**	**3,449**	**3,375**	**12,763**

4.3.2. Resource Gap

Table 7: Financial Resource Gap

Key Result Area (KRA)	**Resource Gaps**					
	Projected Expenditure (KSh. Million)					
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total**
KRA 1	282	488	641	378	356	**2,145**
KRA 2	158	151	631	91	626	**1,657**
KRA 3	764	1,052	1,727	2,965	2,378	**8,886**

4.3.3. Resource Mobilization Strategies

The institute's main source of funding is the Government through the exchequer. Strategies have also been put in place to mobilize funding from development partners. This involves leveraging the institute strategic advantage in well-equipped laboratory, world-renowned research scientists and well-developed infrastructure to secure research grants and collaboration agreements.

4.4 Risk Analysis and Mitigation Measures

KMFRI's Risk Management Strategy (RMS) provides a structured and coherent approach for the identification, assessment, and management of unforeseen threats identified in the SWOT analysis. KMFRI shall employ the RMS to mitigate risks associated with the implementation of this plan as indicated in Appendix 4.

CHAPTER FIVE: IMPLEMENTATION, MONITORING AND EVALUATION

5.0 Overview

To implement this Strategic Plan effectively and attain the desired results, KMFRI will address structural bottlenecks, strengthen the Monitoring and Evaluation (M&E) Unit and collaborate with stakeholders in monitoring and evaluation of the Strategic Plan.

The Strategic Plan will be implemented based on target outputs and indicators that are outlined in the implementation matrix in Appendix 5. Each Directorate and Department will be responsible for following up of the implementation of activities in order to realize the strategic objectives that fall within their jurisdictions. The management of performance in the implementation of the Strategic Plan will form an important part of management responsibilities at all levels. The Institute's annual Performance Contract targets will be drawn from the Strategic Plan. Performance monitoring and reporting will guide the decisions made by the Management.

5.1 Monitoring and Evaluation Institutional Framework

Monitoring and Evaluation (M&E) are important aspect in the implementation of the Strategic Plan. Successful implementation of the Strategic Plan requires implementation of an M&E framework. The framework will enable KMFRI to measure its performance against the set targets. The M&E framework will involve preparation and implementation of Annual Work Plans by the Directorates and Departments. The work plans will be linked to the Key Results Areas (KRAs) and expected output/targets as elaborated in the Strategic Plan Implementation Matrix in Appendix 5.

The purpose of monitoring is to ensure that the plan is implemented according to schedule and if there are any deviations, appropriate and timely actions are taken. The implementation will thus be closely monitored to ensure compliance. Monitoring will be carried out on a continuous basis while evaluation will be done periodically. Monitoring will involve regular data collection and analysis on the progress of implementation of the Plan. The results from the analysis will then be used to inform decision-making, including taking corrective action where deviations in implementation have been noted.

During the Plan period, two types of monitoring will be carried out namely:

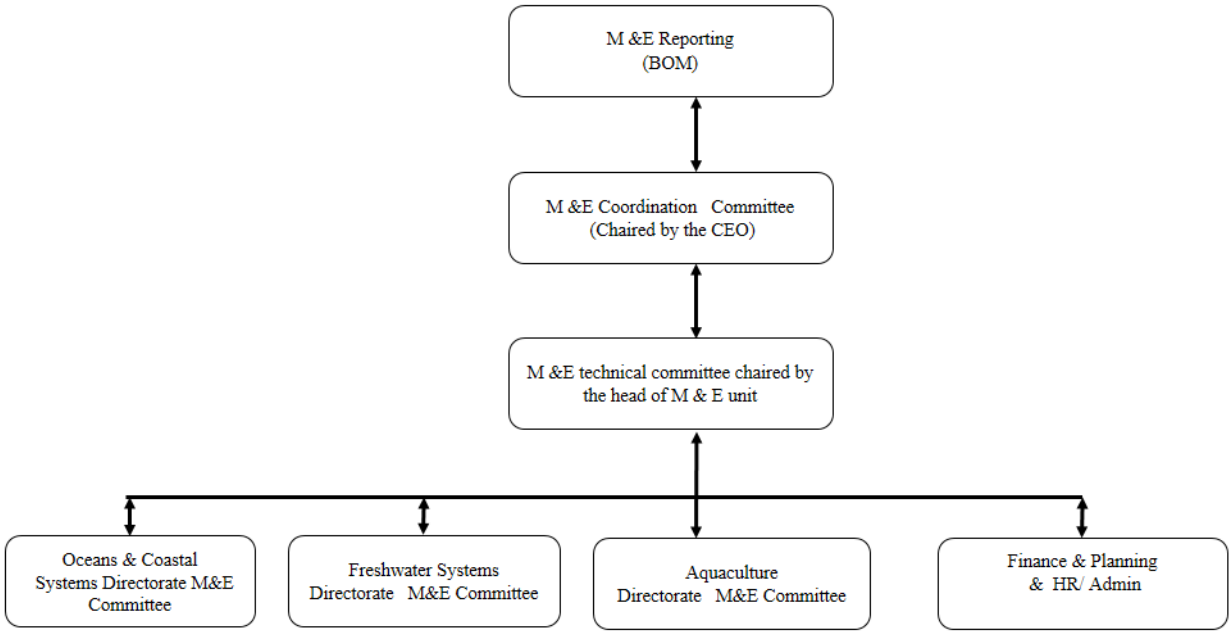
i. Operations monitoring which tracks project operations including activities and outputs to ensure that implementation is on track. This will provide information on how resources are used to support implementation of activities and to ensure that activities are carried out within the planned time frames and outputs are obtained and delivered as necessary; and
ii. Impact monitoring which will focus on the KRAs.

The information generated through monitoring will then be used to demonstrate achievements made in each of the expected output/targets. For each of the output areas, the success indicators are presented in Appendix 5 and the targets against these indicators will be transferred into the

annual performance contract matrices. The performance contracts for KMFRI staff will be based on this Plan, and annual budgets will also be based on and justified against the Annual Work Plan (AWP). In addition, the Performance Appraisal System (PAS) will be administered in line with the Strategic Plan. Evaluation will be done Bi-annual, Annually, Mid-term and end of the Plan period to facilitate informed decision making by the Board of Management.

The Monitoring and Evaluation system for KMFRI will consists of Monitoring and Evaluation structure and cycle. The M & E reporting structure will consist of members of Board of Management, M &E Coordination Committee comprising of Heads of Directorates, Departments Units and sections under the championship of the Director/CEO KMFRI. M&E technical committee will be established and the members of the committee will be representatives of relevant directorates, division, units and sections heads nominated by their respective heads. The representative officers will be the contact officers or liaison officers to ensure that necessary information and reports are provided on a timely basis for compilation of reports as per guidelines. Besides, all Directorates, Divisions, Units and Sections will be encouraged to form M&E Units/Sub-Committees whose mandate will be to analyse progress and evaluate outputs of various activities on a monthly basis. The M&E structure and cycle are provided in figures 1 and 2.

Figure 1: KMFRI Monitoring and Evaluation Structure

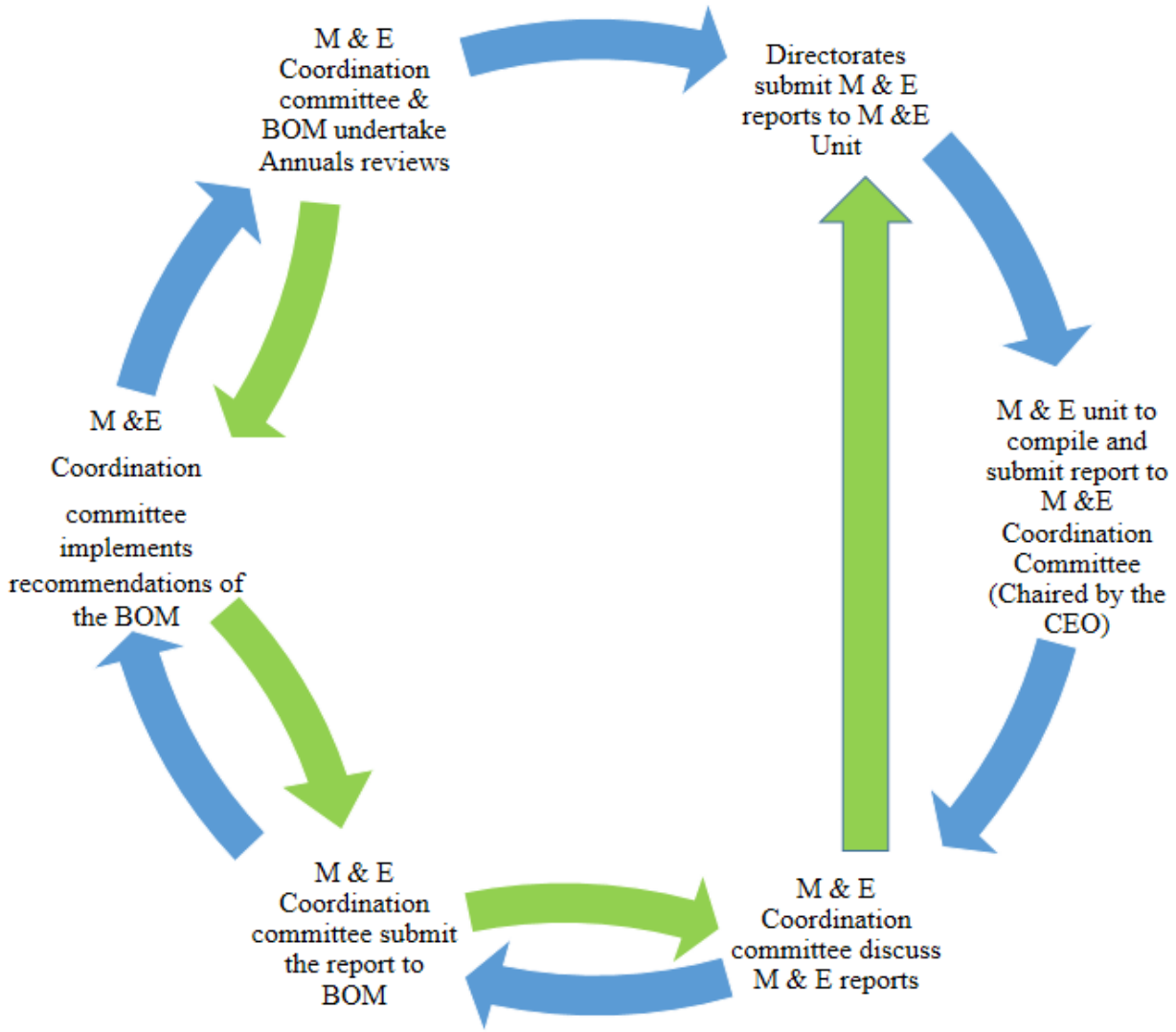


5.2 Monitoring and Evaluation Reporting

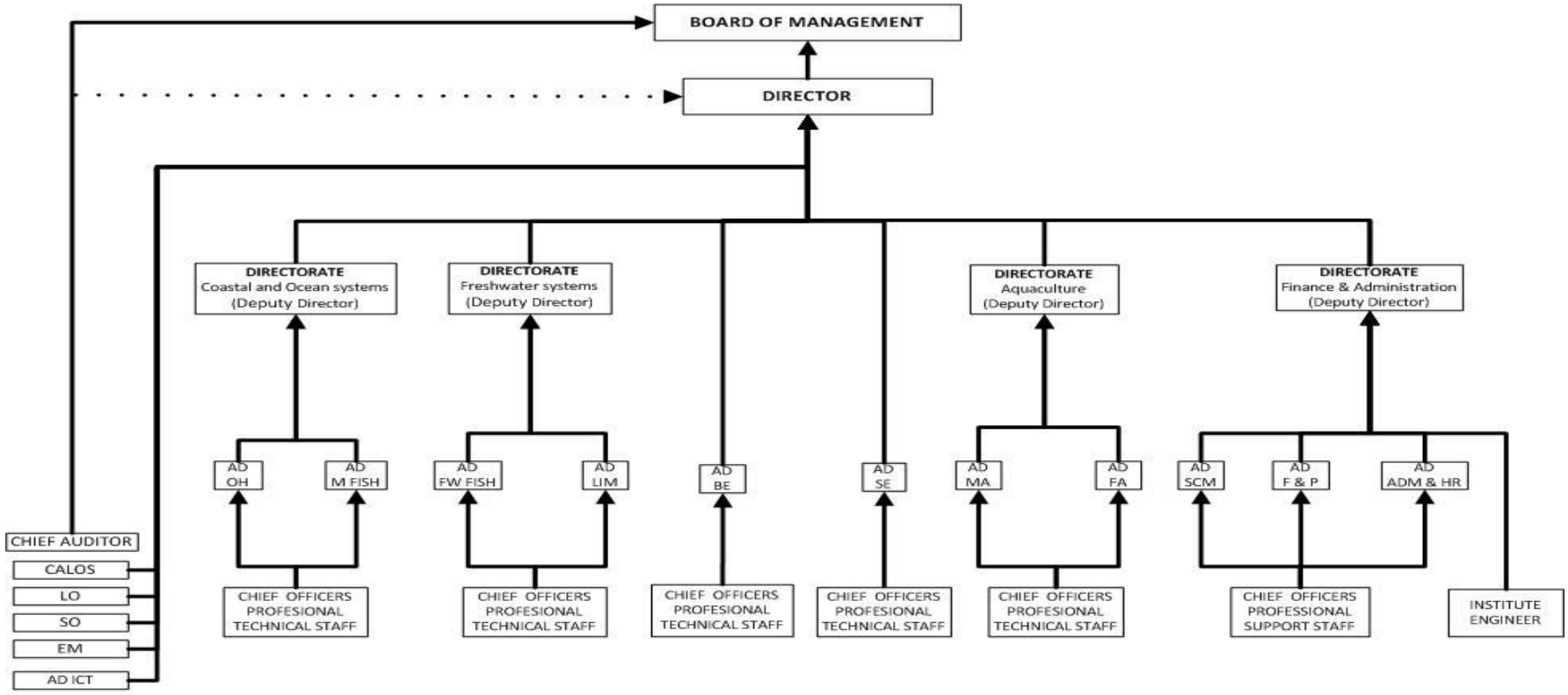
During the implementation period, all directorates, unit will prepare and submit the quarterly and annual monitoring reports, supervision reports and general progress reports to the head of M & E unit that will be discussed by M &E technical committee for compilation and discussion by the M and E Coordination Committee. Reporting will be an integral part of the M&E and Learning

process and will involve the systematic and timely collation and provision of essential information at periodic intervals. The information collected through the reports will be used to establish the status in activity completion against the set timeframes and planned target outputs, compliance with the set policies, procedures and standards.

Figure 2: Monitoring and Evaluation Cycle (the clockwise arrow represents the direction of information flow and anti-clockwise arrow denotes review/feedback)



Appendix 1 Current Organization Structure

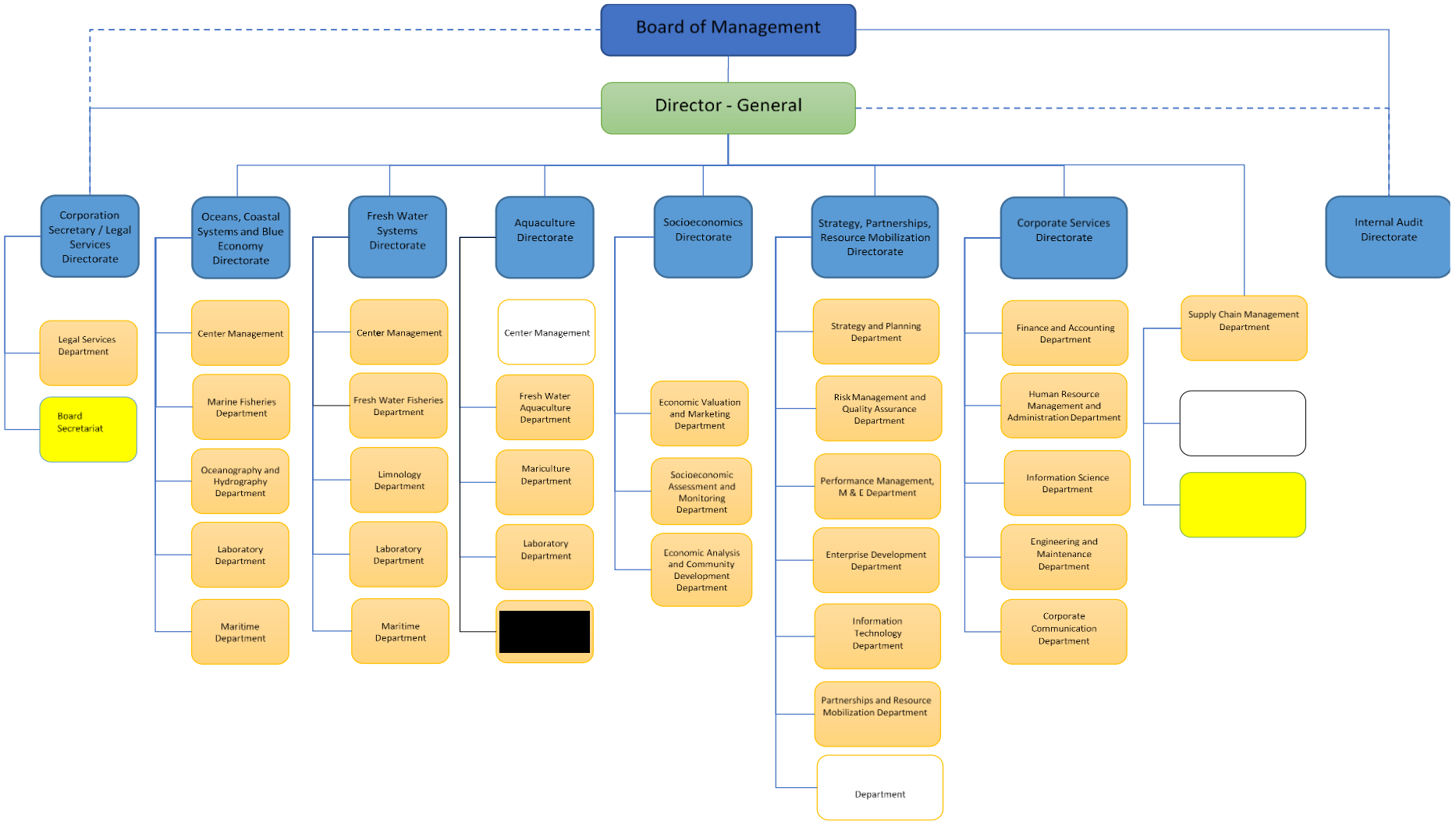


KEY

AD OH - Assistant Director Oceanography and Hydrography
AD M FISH - Assistant Director Marine Fisheries
AD SE – Assistant Director Socio-economics
AD FW FISH - Assistant Director Freshwater Fisheries
AD LIM – Assistant Director Limnology
AD MA – Assistant Director Mariculture
AD FA – Assistant Director Freshwater Aquaculture
AD BE – Assistant Director Blue Economy

AD SCM – Assistant Director Supply Chain Management
AD F & P – Assistant Director Finance and Planning
AD ADM & HR – Assistant Director Administration & Human Resources
AD ICT – Assistant Director Information Communication Technology
CALOS – Corporate Affairs, Linkages and Outreach Services
LO – Legal Officer
SO – Security Officer
EM – Enterprise Manager

Appendix 2: KMFRIôs Proposed Organogram



Appendix 3: Staff Establishment

No.	Cadre	Job Group	Proposed	In Post	Variance	Note
	Research Scientists					
1.	Director - General	KMFRI 1	1	1	0	
2.	Director	KMFRI 2	4	1	3	
3.	Chief Scientist Emeritus		3	0	3	
4.	Chief Research Scientist	KMFRI 3	16	3	13	
5.	Principal Research Scientist	KMFRI 4	34	26	8	
6.	Senior Research Scientist	KMFRI 5	38	29	9	
7.	Assistant Research Scientist / Research Scientist	KMFRI 7 / 6	62	62	0	
	Subtotal		**158**	**122**	**36**	
	Laboratory Services					
1.	Deputy Director, Laboratory Services	KMFRI 3	1	0	1	
2.	Assistant Director, Laboratory Services	KMFRI 4	2	0	2	
3.	Principal Laboratory Analyst	KMFRI 5	4	0	4	
4.	Laboratory Analyst / Senior	KMFRI 7 / 6	23	2	21	
5.	Principal Laboratory Technologist	KMFRI 7	22	32	-10	¶ 8 Principal Laboratory Technologists will translate to Laboratory Analyst during the translation; ¶ 2 officers at Grade 7 are due for retirement in the next 12 months,
6.	Laboratory Technologist / Senior	KMFRI 9 / 8	19	15	4	
7.	Principal Laboratory Technician	KMFRI 9	15	13	2	

No.	Cadre	Job Group	Proposed	In Post	Variance	Note
8.	Laboratory Technician / Senior	KMFRI 10 / 9	34	34	0	
9.	Principal Field Assistant	KMFRI 10	140	140	0	
	Subtotal		**260**	**236**	**24**	
	GIS and Remote Sensing					
1.	Principal GIS and Remote Sensing Officer	KMFRI 5	1	0	1	
2.	GIS and Remote Sensing Officer / Senior	KMFRI 7 / 6	1	0	1	
	Subtotal		**2**	**0**	**2**	
	Maritime Department					
1.	Chief Marine Captain	KMFRI 3	1	0	1	
2.	Senior Principal Marine Captain	KMFRI 4				
3.	Principal Marine Captain	KMFRI 5				
4.	Marine Captain / Senior	KMFRI 7 / 6	2	2	0	
5.	1st Mate	KMFRI 7	2	0	2	
6.	3rd Mate / 2nd Mate	KMFRI 9 / 8	3	1	2	
7.	Principal Coxswain	KMFRI 8	8	5	3	
8.	Coxswain / Senior	KMFRI 10 / 9	7	4	3	
9.	Bosun	KMFRI 10	11	11	0	
10.	Ordinary Seaman / Able Seaman	KMFRI 12 / 11	11	0	11	
11.	Principal Diver	KMFRI 9	4	2	2	
12.	Diver / Senior	KMFRI 11 / 10	5	0	5	
13.	Gear Technologist / Senior	KMFRI 9 / 8	2	0	2	
14.	**Subtotal**		**56**	**25**	**31**	
	Finance and Accounting					

No.	Cadre	Job Group	Proposed	In Post	Variance	Note
1.	Director, Corporate Services	KMFRI 2	1	1	0	
2.	Deputy Director, Finance and Accounts	KMFRI 3	1	0	1	
3.	Assistant Director, Finance and Accounts	KMFRI 4	2	0	2	
4.	Principal Accountant	KMFRI 5	4	1	3	
5.	Accountant / Senior	KMFRI 7 / 6	10	8	2	
6.	Principal Assistant Accountant	KMFRI 7	6	5	1	
7.	Assistant Accountant / Senior	KMFRI 9 / 8	20	20	0	
8.	**Subtotal**		**44**	**35**	**9**	
	Human Resource Management					
1.	Deputy Director, Human Resource Management and Administration	KMFRI 3	1	1	0	
2.	Assistant Director, Human Resource Management	KMFRI 4	1	0	1	
3.	Principal Human Resource Management Officer	KMFRI 5	2	1	1	
4.	Human Resource Management Officer / Senior	KMFRI 7 / 6	9	8	1	
5.	Principal Assistant Human Resource Management Officer	KMFRI 7	5	0	5	
6.	Assistant Human Resource Management Officer / Senior	KMFRI 9 / 8	8	14	-6	¶ 5 Senior Assistant Human Resource Officers are due for promotion to Principal Assistant Human Resource Officers, KMFRI 7; ¶ One officer to be translated to Human Resource Management Officer, KMFRI 7 by virtue of qualification and experience

No.	Cadre	Job Group	Proposed	In Post	Variance	Note
7.	**Subtotal**		**26**	**24**	**2**	
	Administration					
1.	Assistant Director, Administration	KMFRI 4	1	0	1	
2.	Principal Administrative Officer	KMFRI 5	1	0	1	
3.	Administrative Officer / Senior	KMFRI 7 / 6	5	6	-1	One Senior administration Officer is due for promotion to Principal Administrative Officer, KMFRI 5
4.	Principal Assistant Administrative Officer	KMFRI 7	6	0	6	
5.	Assistant Administrative Officer / Senior	KMFRI 9 / 8	5	12	-7	¶ One Assistant Administrative Officer, KMFRI 8 is due to retire within the next 12 months; ¶ 6 Senior Administrative Officers, KMFRI 8 will be translated to Principal Assistant Administrative Officer, KMFRI 7
	Subtotal		**18**	**18**	**0**	
	Office Administrative Services					
1.	Principal Office Administrator	KMFRI 5	1	0	1	
2.	Office Administrator / Senior	KMFRI 7 / 6	5	4	1	
3.	Principal Assistant Office Administrator	KMFRI 7	8	0	8	
4.	Assistant Office Administrator / Senior	KMFRI 9 / 8	10	18	-8	8 Senior Assistant Office Administrators, KMFRI 8 are due for promotion to Principal Assistant Office Administrator, KMFRI 7
	Subtotal		**24**	**22**	**2**	

No.	Cadre	Job Group	Proposed	In Post	Variance	Note
	Corporate Communication & Public Relations Department					
1.	Deputy Director, Corporate Communication and Public Relations	KMFRI 3	1	0	1	
2.	Assistant Director, Corporate Communication and Public Relations	KMFRI 4				
3.	Principal Corporate Communications and Public Relations Officer	KMFRI 5	1	0	1	
4.	Corporate Communication and Public Relations Officer / Senior	KMFRI 7 / 6	3	1	2	
5.	Principal Assistant Corporate Communication and Public Relations Officer	KMFRI 7	1	0	1	
6.	Assistant Corporate Communications and Public Relations Officer	KMFRI 9 / 8	4	4	0	
7.	Principal Customer Care Assistant	KMFRI 9	7	6	1	
8.	Customer Care Assistant / Senior	KMFRI 11 / 10	3	3	0	
	Subtotal		**20**	**14**	**6**	
	Information Science					
1.	Assistant Director, Information Scientist	KMFRI 4	1	0	1	
2.	Principal Information Scientist	KMFRI 5	1	0	1	
3.	Information Scientist / Senior	KMFRI 7 / 6	2	3	-1	One Senior Information Scientist, KMFRI 6, is due for promotion to Principal Information Scientist, KMFRI 5
4.	Principal Assistant Information Scientist	KMFRI 7	3	2	1	
5.	Assistant Information Scientist	KMFRI 9 / 8	10	12	-2	¶ One Senior Assistant Information Scientist is due for promotion to Principal Assistant Information

No.	Cadre	Job Group	Proposed	In Post	Variance	Note
						Scientist; ¶ One Senior Assistant Information Scientist is due to retire within the next 12 months
	Subtotal		**17**	**17**	**0**	
	Records Management					
1.	Principal Records Management Officer	KMFRI 5	1	0	1	
2.	Records Management Officer / Senior	KMFRI 7 / 6	2	1	1	
3.	Principal Assistant Records Management Officer	KMFRI 7	3	0	3	
4.	Assistant Records Management Officer / Senior	KMFRI 9 / 8	13	17	-4	¶ Two Assistant Records Management Officers are due to retire within the next 12 months; ¶ Two Senior Assistant Records Management Officers, KMFRI 8, are due for promotion to Principal Assistant Records Management Officer, KMFRI 7.
	Subtotal		**19**	**18**	**1**	
	Engineering Department					
1.	Senior Engineer	KMFRI 5	1	0	1	
2.	Assistant Engineer / Engineer	KMFRI 7 / 6	2	1	1	
3.	Principal Engineering Technician	KMFRI 7	5	4	1	
4.	Engineering Technician / Senior	KMFRI 9 / 8	5	4	1	
5.	Principal Artisan	KMFRI 9	10	9	1	
6.	Artisan / Senior	KMFRI 11 / 10	8	9	-1	One Senior Artisan is due for promotion to Principal Artisan

No.	Cadre	Job Group	Proposed	In Post	Variance	Note
	Subtotal		**31**	**27**	**4**	
	Security					
1.	Security Officer / Senior	KMFRI 7 / 6	1	0	1	
2.	Principal Assistant Security Officer	KMFRI 7	1	0	1	
3.	Assistant Security Officer / Senior	KMFRI 9 / 8				
	Subtotal		**2**	**0**	**2**	
	Drivers					
1.	Principal Driver	KMFRI 9	10	8	2	
2.	Driver / Senior	KMFRI 11 / 10	28	22	6	
	Subtotal		**38**	**30**	**8**	
	Office Assistants					
1.	Principal Office Assistant	KMFRI 10	20	20	0	
	Subtotal		**20**	**20**	**0**	
	Strategy and Planning					
1.	Director, Strategy and Planning, Compliance, Partnership Development and Resource Mobilization	KMFRI 2	1	0	1	
2.	Deputy Director, Strategy and Planning (Economic Planning)	KMFRI 3	1	0	1	
3.	Assistant Director, Strategy and Planning (Economic Planning)	KMFRI 4	1	0	1	
4.	Principal Planning Officer (Economic Planning)	KMFRI 5				
5.	Planning Officer (Economic Planning) / Senior	KMFRI 7 / 6	2	1	1	

No.	Cadre	Job Group	Proposed	In Post	Variance	Note
	Subtotal		**5**	**1**	**4**	
	Performance Management and Monitoring and Evaluation					
1.	Assistant Director Strategy and Planning (Performance Management)	KMFRI 4	1	0	1	
2.	Principal Planning Officer (Performance Management)	KMFRI 5				
3.	Planning Officer (Performance Management) / Senior	KMFRI 7 / 6	1	1	0	
	Subtotal		**2**	**1**	**1**	
	Information and Communication Technology					
1.	Deputy Director ICT	KMFRI 3	1	0	1	
2.	Assistant Director ICT	KMFRI 4	1	0	1	
3.	Principal ICT Officer	KMFRI 5	3	0	3	
4.	ICT Officer / Senior	KMFRI 7 / 6	5	5	0	Two Senior ICT Officers are due for promotion to Principal ICT Officer
5.	Principal Assistant ICT Officer	KMFRI 7	3	2	1	
6.	Assistant ICT Officer / Senior	KMFRI 9 / 8	3	6	-3	¶ One Senior Assistant ICT Officer is due for promotion to Principal Assistant ICT Officer, KMFRI ¶ Two Senior Assistant ICT Officers are due for translation to ICT Officer
	Subtotal		**16**	**13**	**3**	
	Technical Capacity Building					
1.	Deputy Director, Technical Capacity Building	KMFRI 3	1	0	1	

No.	Cadre	Job Group	Proposed	In Post	Variance	Note
2.	Assistant Director, Technical Capacity Building	KMFRI 4	1	0	1	
	Subtotal		**2**	**0**	**2**	
	Resource Mobilization and Partnership Development					
1.	Assistant Director, Resource Mobilization and Partnership Development	KMFRI 4	1	0	1	
2.	Principal Resource Mobilization and Partnership Development Officer	KMFRI 5	1	0	1	
3.	Resource Mobilization and Partnership Development Officer / Senior	KMFRI 7 / 6				
	Subtotal		**2**	**0**	**2**	
	Risk Management and Quality Assurance					
1.	Assistant Director, Risk Management and Quality Assurance Officer	KMFRI 4	1	0	1	
2.	Principal Risk Management and Quality Assurance Officer	KMFRI 5				
3.	Risk Management and Quality Assurance Officer / Senior	KMFRI 7 / 6	1	0	1	
	Subtotal		**2**	**0**	**2**	
	Enterprise Development					
1.	Deputy Director Business Development Services	KMFRI 3	1	0	1	
2.	Assistant Director Business Development Services	KMFRI 4	1	0	1	
3.	Principal Business Development Officer	KMFRI 5	1	0	1	
4.	Business Development Officer / Senior	KMFRI 7 / 6	1	1	0	
5.	Principal Assistant Sales and Marketing Officer	KMFRI 7	1	1	0	

No.	Cadre	Job Group	Proposed	In Post	Variance	Note
6.	Assistant Sales and Marketing Officer / Senior	KMFRI 9 / 8	1	1	0	
7.	Hospitality Officer / Senior	KMFRI 7 / 6	1	0	1	
8.	Assistant Housekeeper / Senior	9 / 8	1	0	1	
9.	Housekeeping Assistants / Senior	11 / 10	1	0	1	
10.	Cook / Senior	KMFRI 11 / 10	1	0	1	
11.	Waiter / Senior	KMFRI 11 / 10	2	0	2	
	Subtotal		**12**	**3**	**9**	
	Supply Chain Management Department					
1.	Supply Chain Manager	KMFRI 3	1	1	0	
2.	Deputy Supply Chain Manager	KMFRI 4	1	0	1	
3.	Principal Supply Chain Management Officer	KMFRI 5	2	0	2	
4.	Supply Chain Management Officer / Senior	KMFRI 7 / 6	8	4	4	
5.	Principal Assistant Supply Chain Management Officer	KMFRI 7	5	5	0	
6.	Assistant Supply Chain Management Officer / Senior	KMFRI 9 / 8	16	17	-1	One Senior Assistant ICT Officer is due for translation to ICT Officer.
	Subtotal		**33**	**27**	**6**	
	Internal Audit Directorate					
1.	Director	KMFRI 2	1	1	0	
2.	Deputy Director	KMFRI 3	1	0	1	
3.	Assistant Director	KMFRI 4	3	0	3	
4.	Principal Internal Auditor	KMFRI 5				

No.	Cadre	Job Group	Proposed	In Post	Variance	Note
5.	Internal Auditor / Senior	KMFRI 7 / 6	3	5	-2	Two Senior Internal Auditors are due for promotion to Senior Internal Auditor
	Subtotal		**8**	**6**	**2**	
	Corporation Secretary / Legal Services					
1.	Corporation Secretary and Director of Legal Services	KMFRI 2	1	0	1	
2.	Principal Legal Officer	KMFRI 5	1	0	1	
3.	Legal Officer / Senior	KMFRI 7 / 6				
4.	Principal Legal Assistant	KMFRI 7	1	0	1	
5.	Legal Assistant / Senior	KMFRI 9 / 8				
	Subtotal		**3**	**0**	**3**	
	Total Establishment		820	659	161	
	Technical		601	73%		
	Support		219	26%		

Appendix 4: Risk Management Plan

Risk	Risk factors	Risk level (Institute / National / International)	Risk rating (H, M or L)	Consequence	Mitigating action	Responsible	Time-frame
Organizational Risks	a) Changes in the legal environment b) Inefficient functionality of existing organogram c) Inadequate staff succession plan d) Mandate not well defined in the legal instrument	KMFRI / National	Medium	¶ Loss of staff ¶ Conflicting roles and responsibilities ¶ Gaps in staff establishment ¶ Delays in service delivery ¶ Inefficient organizational structure	¶ Implement provisions of organogram to make it effective, and efficient for responsibility and authority levels; ¶ Institute a staff recruitment and mentoring plan ¶ Implement Recognition, Rewards and Sanctions Policy ¶ Development of an enabling legislation for KMFRI	BOM/ MNGT	Bi-annual

Risk	Risk factors	Risk level (Institute / National / International)	Risk rating (H, M or L)	Consequence	Mitigating action	Responsible	Time-frame
Operational Risks	a) Frequent placements of the fisheries sector to different ministries b) Understaffing and improper placement c) Inadequate promotion and remuneration of staff d) Industrial unrest e) Non-compliance to procurement procedure	KMFRI/ National	High	¶ Disruption in the flow of finances from the exchequer ¶ Loss of professionals due to low morale ¶ Operational failures ¶ Inadequate human resource capacity ¶ Project delays ¶ Inability to undertake research activities in time ¶ Omissions and Litigations ¶ Sanctions and penalties	¶ Seek for funds upfront on a quarterly basis ¶ Appraisal and timely promotion of staff ¶ Institute a staff recruitment plan ¶ Implement frequent consultative meetings between the Institute management and unionized staff members ¶ Structure the departments to carry out functions in compliance to procedures	BOM/ MGT	Quarterly reviews

Risk	Risk factors	Risk level (Institute / National / International)	Risk rating (H, M or L)	Consequence	Mitigating action	Responsible	Time-frame
Legal risks	a) Lack of ownership documents for Institute land b) Unresolved staff disputes c)	KMFRI / National	High	¶ Loss of infrastructure development opportunities ¶ High frequency of court litigations	¶ Engage relevant ministries to secure the Institute's land ownership documents ¶ Capacity building and training on responsible staff ¶ Grievances redress and disciplinary mechanism	BOM/ MGT	Quarterly reviews

Risk	Risk factors	Risk level (Institute / National / International)	Risk rating (H, M or L)	Consequence	Mitigating action	Responsible	Time-frame
Research risks	a) Unexpected regulatory and donor requirements b) Lack of a central repository system for archiving institutional data and information c) Equipment breakdown d) Work safety on land and at sea e) Competition from academic and research entities for resources f) Plagiarism and copyright infringements	KMFRI	Medium	¶ Compromised access to research grants ¶ Loss of data ¶ Accidents and /or loss of staff (death) ¶ Conflicts on intellectual property rights ¶ Delayed research and project failure ¶ Infringement of intellectual property rights regarding provision of raw data ¶ Loss of experience	¶ Conduct frequent reviews of grant opportunities and donor requirements ¶ Strengthening Institutional data portal ¶ Accident insurance for staff ¶ Contingency planning for safety; ¶ Institute service maintenance contracts ¶ Review the research and intellectual property rights policies ¶ Motivate staff through improved remuneration and other rewards ¶ Identification of attractive programmes and mentor researchers to attract more funding ¶ Strengthen the	BOM/ MGT KMFRI Directorates	On a need basis

Risk	Risk factors	Risk level (Institute / National / International)	Risk rating (H, M or L)	Consequence	Mitigating action	Responsible	Time-frame
Financial risks	a) Misappropriation of funds b) Inflation of payments c) Debts/unpaid bills d) Value for money	KMFRI / National	High	¶ Revenue loss, ¶ Project failure	¶ Standardize and computerize financial operations (KMFRI financial policy IFMIS, SOPs, ISO SOPs and regulations) ¶ Full adoption of ERP ¶ Capacity building and training of relevant staff ¶ Insurance ¶ Implement routine audits and internal controls	BOM/ MGT	Continuous, with monthly reviews

Risk	Risk factors	Risk level (Institute / National / International)	Risk rating (H, M or L)	Consequence	Mitigating action	Responsible	Time-frame
Technological Risks	a) Cyber Security b) System Failure c) Innovation patenting loss d) Obsolete equipment e) Physical risks to ICT equipment e.g. theft, fire, etc	KMFRI / National / International	High	¶ Loss of data ¶ Malfunction or loss of ICT hardware and software ¶ Operational failures ¶ Loss of public image ¶ Loss	¶ Standardize technology operations (ICT policy SOPs, ISO SOPs and regulations) ¶ Capacity building and training ¶ Operational certifications ¶ Insurance ¶ Training of staff to prevent, mitigate and deal with cyber security and system failure matters ¶ Contingency planning for data storage and recovery;	BOM/ MGT	Continuous
Political Interference	Lack of public support on adoption of research findings in line with emerging development	National	Low	¶ Loss of public confidence ¶ Insignificant impact on partners	¶ Developing programmes that are in sync with emerging issues	BOM/MGT	Annual

Risk	Risk factors	Risk level (Institute / National / International)	Risk rating (H, M or L)	Consequence	Mitigating action	Responsible	Time-frame
Economic Risk	Low economic growth	National	Low	Reduced funding from the exchequer	¶ Seek for more grants from regional and international partners ¶ Institute austerity measures	National Government	Annual

Appendix 5: Implementation Matrix (D=Director, Aqua=Aquaculture, FWS=Freshwater Systems, OCS=Ocean and Coastal Systems)

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
KEY RESULT AREA 1: RESEARCH AND INNOVATION															
OUTCOME 1: Improved management and development of aquatic resources for enhanced well being															
OUTCOME INDICATOR 1: Evidence of Improved management and development of aquatic resources															
STRATEGIC OBJECTIVE 1: To conduct innovative research for the Blue Economy															
2 hatcheries for fish breeding	Number of hatcheries established	No	N/A	N/A	0	1	1	0	0	0	100	120	0	0	D-Aqua.
2 gene banks	Number of gene banks established	No	N/A	N/A	0	0	2	0	0	0	0	50	0	0	D-Aqua,
5 high value species domesticated for aquaculture	Number of species domesticated for aquaculture	No.	3	N/A	1	1	1	1	1	2	2	2	2	2	D-Aqua.
Standards for seed certification developed	A certification standard developed	No	0	N/A	0	0	1	0	0	0	0	5	0	0	D-Aqua.
5 Aquaculture suitability maps produced	Number of aquaculture suitability maps developed	No	2	N/A	0	2	1	2	0	0	2	1	2	0	D-Aqua.
3 potential aquaculture	Number of species trialled	No	1	N/A	0	1	1	1	0	0	2	2	2	0	D-Aqua.

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
species trialled															
Standardized KMFRI feed formulae	Number of standardized feed formulae developed	No.	2	N/A	0	1	0	1	0	0	2	0	2		D-Aqua.
3 protocols for live feeds developed	Number of protocols developed	No	3	N/A	0	1	1	1	0	0	1	1	1	0	D-Aqua.
Climate smart aquaculture technologies developed and tested	Number of climate smart technologies developed	No.	2	N/A	0	1	0	1	0	0	10	0	10	0	D-Aqua.
5 aquaculture species sequenced	Number of aquaculture species sequenced and mapped	No	5	N/A	0	1	2	1	1	0	1	2	1	1	D-Aqua.
	Number of officers trained on bioinformatics undertaken	No	N/A	0	0	2	1	2	2	0	3	3	3	3	D-Aqua.
1 centre for fish bio-security and disease surveillance	A bio-security and fish disease surveillance centre	No.	N/A	N/A	0	0	1	0	0	0	0	100	0	0	D- FWS / OCS/AQUA

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
established															
50 water quality assessments from major/ commercial aquaculture farms.	Number of commercial farms assessed and monitored	No.	10	0	0	10	10	10	10	0	2	2	2	2	D- FWS / OCS/AQUA
10 Cruise surveys to estimate the abundance and distribution of key commercial fish stocks	Number of cruise surveys undertaken to assess fish stocks	No.	2	2	2	2	2	2	2	30	30	30	30	30	D-FWS & OCS
Develop fishing gear technologies	Number of technologies developed	No.	N/A	N/A	0	2	2	2	2	0	10	10	10	10	D– FWS & OCS
8 quantitative stock assessments	Number of species with quantitative stock assessments	No.	5	N/A	2	2	2	2	2	4	4	4	4	4	D- FWS & OCS
Build capacity in quantitative stock assessment	Number of officers trained in quantitative stock assessment	No	2	N/A	0	2	2	2	2	0	2	2	2	2	D- FWS & OCS

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
Catch assessment surveys in marine and freshwaters	Number of catch assessment surveys conducted	No.	20	N/A	6	8	8	8	8	6	10	10	10	10	D-FWS & OCS
Establishment of Species specific biomass of key commercial fish within EEZ	Number of surveys conducted	No.	N/A	N/A	0	2	2	2	2	0	30	30	30	30	D – OCS
Establishment of the Biology and ecology of key commercial species in the Ocean	Number of surveys conducted	No.	N/A	N/A	0	1	1	1	1	0	15	15	15	15	D– OCS
20 fisheries observer deployments on commercial vessels implemented	Number of fisheries observer deployments	No.	N/A	N/A	4	4	4	4	4	6	6	6	6	6	D- FWS & OCS
5 priority species genetically	Number of species with genetic	No.	N/A	N/A	1	1	1	1	1	2	2	2	2	2	D-FWS & OCS

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
mapped	assessments														
3 ecosystem friendly technologies piloted	Number of fishing technologies piloted	No	4	N/A	0	1	1	1		0	1	1	1	0	D-FWS & OCS
10 fishing grounds and aggregating areas mapped	Number of fishing grounds mapped	No.	10	N/A	2	2	2	2	2	2	2	2	2	2	D-FWS & OCS
Fisheries assessed on ecological and socioeconomic impacts	Number of fisheries assessed on ecological and socioeconomic impacts	No.	20	N/A	1	1	1	1	1	2	2	2	2	2	D-FWS & OCS
5 value added products from fish and other aquatic resources developed	Number of value-added fish products developed and disseminated	No	5	N/A	1	1	1	1	1	2	2	2	2	2	D- FWS / OCS/AQUA
2 innovative technologies developed patented	Number of patents developed	No	2	N/A	0	1	0	0	1	0	3	0	0	2	D- FWS / OCS/AQUA
20 Oceanograp	Number of surveys	No	10	N/A	4	4	4	4	4	200	200	200	200	200	D-FWS & OCS

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
hic and limnological survey conducted	conducted														
10 biophysical assessments conducted and sites mapped	Number of surveys and maps produced	No.	3	N/A	2	2	2	2	2	2	2	2	2	2	D-FWS & OCS
5 surveys to assess impacts of global warming and ocean acidification conducted	Number of surveys conducted	No	N/A	N/A	1	1	1	1	1	3	3	3	3	3	D-FWS & OCS
10 sites for long-term monitoring of environmental changes established in marine and freshwater systems	Number of sites with long-term monitoring established	No	N/A	N/A	0	3	2	2	3	0	2	2	2	3	D-FWS /OCS/AQUA.
4 officers trained in	Number of officers trained	No	N/A	N/A	0	1	1	1	1	0	2	2	2	2	D-FWS /OCS

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
data collection and interpretation of seismic data															
5 surveys to investigate pollution levels in aquatic habitat	Number of surveys conducted	No	20	N/A	1	1	1	1	1	5	5	5	5	5	D-FWS /OCS/AQUA.
10 socioeconomic assessments to inform management	Number of surveys conducted	No	5	N/A	2	2	2	2	2	10	10	10	10	10	D-FWS /OCS/AQUA.
3 fish value-chains assessed	Number of surveys conducted	No.	4	N/A	0	1	1	1	0	0	5	7	7	0	D-FWS /OCS/AQUA.
A cost-effective market information system developed	A market information system for freshwater systems	No	N/A	N/A	0	1	0	0	0	1	10	1	1	1	D-FWS /OCS/AQUA.
15 consultative meetings conducted	Number of consultative meetings with national,	No.	N/A	N/A	3	3	3	3	3	5	5	5	5	5	D-FWS /OCS/AQUA.

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
with national, regional and international agencies to enhance marketing of fish and fisheries products	regional and international agencies														
Sub-Total										**282**	**488**	**641**	**378**	**356**	
KEY RESULT AREA 2: KNOWLEDGE MANAGEMENT AND DISSEMINATION															
OUTCOME INDICATOR 2: Enhanced knowledge management, dissemination and uptake of innovations															
STRATEGIC OBJECTIVE 2: To transfer knowledge and innovative technologies to communities and stakeholders															
5 KMFRI branded products packaged and disseminated to stakeholders	Number of KMFRI branded products disseminated for adoption	No	2	N/A	1	1	1	1	1	5	5	5	5	5	D-FWS /OCS/AQUA.
2 community-based demonstration facilities established	Number of demonstration facilities	No	N/A	0	0	0	1	0	1	0	0	75	0	75	D-FWS /OCS/AQUA.

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
Information, education and communication (IEC) materials produced	Number of materials produced and disseminated	No	3	3	4	4	4	4	4	8	8	8	8	8	D-FWS /OCS/AQUA.
Outreach activities to promote uptake of technology	Number of outreach activities	No	2	2	4	4	4	4	4	12	12	12	12	12	D-FWS /OCS/AQUA.
An institutional data base established	Number of institutional data base established	No	1	N/A	0	1	0	0	0	0	50	0	0	0	D-FWS /OCS/AQUA.
Intellectual property and research policies for KMFRI reviewed and implemented	KMFRI intellectual policy reviewed, and published	No.	2	N/A	0	2	0	0	0	0	5	0	0	0	D-FWS /OCS/AQUA.
Upscaled digital online platforms	Number of digital online platforms upscaled	No	3	3	0	0	1	1	1	0	0	5	5	5	D-FWS /OCS/AQUA.
10 Kenya Aquatica Journal	Number of journal editions and book	No	2	4	2	2	2	3	3	10	10	10	10	10	D-FWS /OCS/AQUA.

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
editions, 2 Status of fisheries books, and other publications	manuscripts finalized and printed														
Rebranding of KMFRI (logo, signage, vehicles, stationery etc)	Number of Rebranded of KMFRI (logo, signage, vehicles, stationery	No	N/A	N/A	0	4	1	1	1	0	10	5	5	5	D-Corporate Services
12 stakeholder workshop sessions on adoption of KMFRI products	Number of stakeholder workshops conducted successfully	No	2	N/A	2	3	3	2	2	4	4	4	4	4	D-FWS /OCS/AQUA.
5 annual open days conducted	Number of open days conducted	No	N/A	N/A	1	1	1	1	1	6	10	10	10	10	D-Corporate Services
2 biennial scientific conferences organized	Number of scientific conferences organized	No	N/A	N/A	0	1	0	1	0	0	40	0	40	0	D-FWS /OCS/AQUA.
Set up and operationalize marine and fisheries	operationalized marine and fisheries aquaria,	No	N/A	N/A	1	0	1	0	1	120	0	500	0	500	D-FWS /OCS/AQUA.

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
aquaria, museums and training centres	museums and training centres														
Develop and operationalize a Communication Policy and Information Dissemination strategy	Communication policy disseminated Number of community training modules on aquaria, museums, hatcheries developed and disseminated	No	N/A	N/A	0	1	1	0	0	0	5	5	0	0	D-Corporate Services
Sub-Total										**158**	**151**	**631**	**91**	**626**	
KEY RESULT AREA 3: RESOURCE MOBILIZATION AND INSTITUTIONAL CAPACITY BUILDING															
OUTCOME INDICATOR 3: Increased funding and human resource capacity															
STRATEGIC OBJECTIVE 3: To mobilize and manage financial and human resources															
Funds generated through innovative proposals	Amount of funds generated through innovative proposals	KES	90	90	200	200	200	200	200	10	10	10	10	10	D- FWS /OCS/AQUA.
Public private partnerships (PPPs)	Number of PPP ventures	No	N/A	N/A	0	0	1	1	1	0	0	25	25	25	D-FWS /OCS/AQUA.

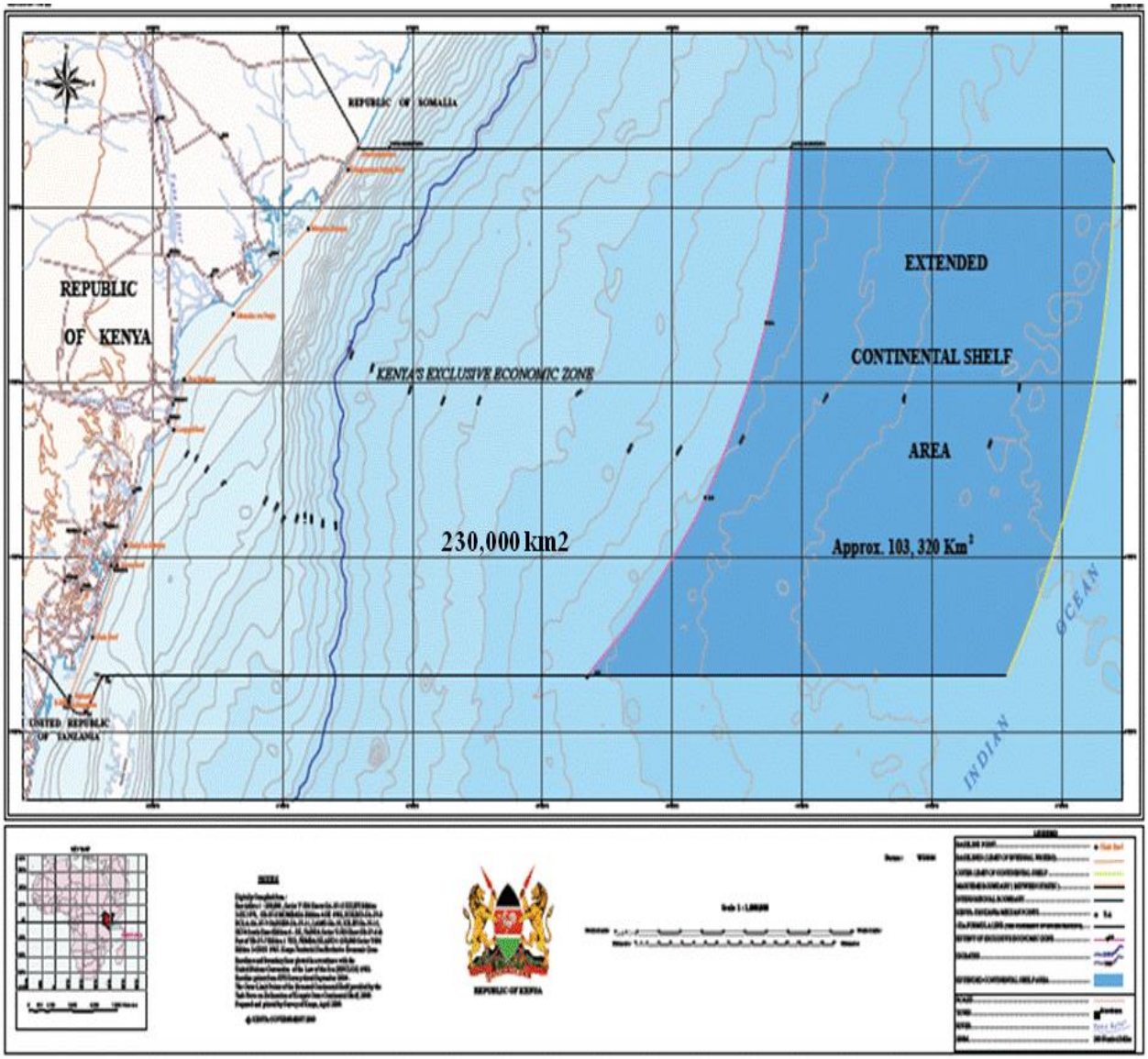
					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
established															
Internally generated revenue through products and services	Amount of revenue generated through sale of KMFRI products and services	KES	10	10	15	20	20	25	25	4	10	10	10	10	D-FWS /OCS/AQUA.
OUTCOME INDICATOR 4: Improved service delivery, visibility and institutional infrastructure															
STRATEGIC OBJECTIVE 4: To strengthen institutional structure and capacity															
Implement the approved establishment	Level of implementation of the approved establishment	%	51	560	69	76	86	94	100	608	876	1,190	1,583	1,767	D-Corporate Services
Develop and implement a comprehensive performance management system	A comprehensive performance management system developed and implemented	No.	N/A	N/A	0	1	0	0	0	0	10	0	0	0	D-Strategy
a framework for management of organization assets and infrastructur	A framework for management of organization assets and infrastructure developed and	No.	N/A	N/A	0	1	0	0	0	0	5	0	0	0	D-Corporate Services

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
e developed and implemented	implemented														
Bio-security Centre established	Bio-security Centre developed and equipped	No.	N/A	N/A	0	0	0	0	1	0	0	0	0	400	D-FWS /OCS/AQUA.
Acquire title deeds for all KMFRI centres/stations	Title deeds of all KMFRI centres/stations secured	No.	N/A	N/A	1	1	1	1	1	1	1	2	2	1	D-Corporate Services
Establish new KMFRI centers/stations	Number of new KMFRI centres/stations established	No.	N/A	N/A	1	0	1	0	0	20	0	120	0	0	D-Strategy
Develop and implement a Monitoring and Evaluation strategy	Level of implementation	%	N/A	N/A	10	30	70	90	100	5	10	10	10	10	D-Strategy
Develop legislation to enable KMFRI realize the expanded mandate	Level of development	%	N/A	N/A	10	60	100	0	0	0	10	20	0	0	D-Legal Services
Develop infrastructur	Number of centres/stations	No.	2	50	1	1	1	1	1	10	20	15	50	80	D-Strategy

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
e and equip all centres/stations	with new infrastructure and equipment														
Develop a specialized laboratory for RV Mtafiti and RV Uvumbuzi	Specialized laboratories for RV Mtafiti and RV Uvumbuzi	No.	1	200	1	1	1	1	1	120	120	120	120	120	D-Strategy
Establish and operationalize the Molecular Laboratory	Molecular Laboratory equipped and operationalized	No.	N/A	N/A	0	0	1	0	0	0	0	250	0	0	D- FWS /OCS/AQUA.
Establish an International Nile Perch Research Centre in Kisumu	An International Nile Perch Research Centre Established in Kisumu	No.	N/A	N/A	0	0	0	1	0	0	0	0	1,200	0	D- FWS
Sub-Total										**764**	**1,052**	**1,727**	**2,965**	**2,378**	
KEY RESULT AREA 4: Collaboration and Partnerships															
OUTCOME INDICATOR 5: Increased collaboration and partnerships in research and development															
STRATEGIC OBJECTIVE 5: To promote local and international collaborations and partnerships															

					Targets					Budget Estimates (KShs. Million)					
OUTPUT (Target for 5years accumulated)	**Output Indicators**	**Unit**	**Baseline year 2017/2018**	**Baseline value 2017/2018**	**Target 2018/2019**	**Target 2019/20**	**Target 2020/21**	**Target 2021/22**	**Target 2022/23**	**2018/2019**	**2019/20**	**2020/21**	**2021/22**	**2022/23**	**Responsibility**
Establish and maintain collaborations and partnerships in research and development	Number of collaborations and partnerships in research and development established	No.	5	10	5	8	10	10	10	5	5	5	5	5	D- FWS /OCS/AQUA.
Develop and implement memoranda of understanding (MoUs)	Number of MoUs developed for endorsement	No.	1	1	2	2	2	2	2	10	10	10	10	10	D- FWS /OCS/AQUA.
Sub-Total										**15**	**15**	**15**	**15**	**15**	
Gross Total										**1,219**	**1,706**	**3,014**	**3,449**	**3,375**	

Appendix 6: Map of Kenyan Coast Showing the Exclusive Economic Zone (EEZ) with the Agreed Extension



Appendix 7: Map of Kenya Showing the Locations of KMFRI's Centres and Stations