

DRAFT
THE REPUBLIC OF KENYA
MINISTRY OF FISHERIES DEVELOPMENT



A MANGEMENT PLAN FOR FISHERIES TARGETING
SMALL AND MEDIUM SIZED PELAGIC FISH



Ministry of Fisheries Development
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**ENDORSEMENT OF THE MANAGEMENT PLAN FOR THE FISHERIES
TARGETING SMALL AND MEDIUM SIZED PELAGIC FISH
NTG TO COMPLETE**

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ACRONYMS

AFP	Artisanal Fish Processors
BMU	Beach Management Unit
COFI	Commitee on Fisheries
CBD	Convention on Biological Diversity
EAF	Ecosystem Approach to Fisheries
EEZ	Exclusive Economic Zone
EMCA	Environmental Management and Coordination Act
ERA	Ecological Risk Assessment
FAO	Food and Agriculture Organization
FiD	Fisheries Department
ICZM	Integrated Coastal Zone Management
IFP	Industrial Fish Processors
KCDP	Kenya Coastal Development Project
KMFRI	Kenya Marine Fisheries Research Institute
KWS	Kenya Wildlife Services
MCS	Monitoring, Control and Surveillance
MPAs	Marine Protected Areas
NEM	North East Monsoon
NTG	National Task Group
SEM	South East Monsoon
SPAW	Specially Protected Areas and Wildlife
SWIOFP	South West Indian Ocean Fisheries Project
UNCLOS	United Nations Convension on Law of the Sea
WSSD	World Summit for Sustainable Development

1. PURPOSE OF THE FISHERY MANAGEMENT PLAN

The artisanal fishery in Kenya is recognized as one of the most important contributors to the food security of coastal villages. Vision 2030 identifies fisheries alongside other food sectors and proposes value addition and use of modern fishing technology in the fisheries sector. However, the increase in fishing activity and a decrease in catches (see Baseline study and Ecological Risk Assessment for details) have necessitated an urgent intervention into the management of the resource, if optimal benefits are to be obtained.

There is currently no specific Management Plan for the artisanal fishery targeting small and medium sized pelagic fish.

The overall purpose of the plan is to ensure that the artisanal fishery targeting small and medium sized pelagic fish in Kenya is sustainable in the long term, providing the maximum social and economic benefit to the fishers that depend on fishing for their livelihood.

This plan will be the reference document agreed by all stakeholders (fishers, managers, NGOs) that describes the key objectives of this sector, identifies key issues and how these will be addressed, as well as how this fishery will be managed. The plan also includes an operational part that provides the process and the resources required to ensure that progress is monitored during the implementation time of the plan.

2. RATIONALE

The Ecosystem Approach to Fisheries (EAF) has been developed by FAO in response to the need to implement, in a practical manner with the principles of sustainable development (WCED, 1987), the Convention on Biological Diversity (CBD) and, more recently, the Code of Conduct for Fisheries (FAO, 1995). EAF is consistent with all these principles and has been adopted by COFI as the appropriate framework for the management of fisheries. Consequently, it deals with all the ecological consequences of fishing plus it recognises the social and economic implications of fishing and its management arrangements. It also assists in understanding how these activities interact and can affect the other. Finally, it provides decisions on necessary institutional arrangements and processes (related to research, development and enforcement of management measures and monitoring of the fishing activity) required to ensure the sustainable management of this fishery

Using the EAF framework, the requirement for Fisheries Management Plans has been recognised by Kenya, and will help to plan, coordinate and prioritise current and proposed activities. The

National Task Group (NTG) has advocated that a single Fishery Management Plan is required for the artisanal sector targeting small and medium sized pelagic fish.

With respect to artisanal and sport fishery targeting small and medium sized pelagic fish, the general objectives of the Government of Kenya are:

1. Ensure long-term biological sustainability and ecological integrity of the pelagic fishery
2. To ensure development of a pelagic fishery that addresses community, national and regional concerns and interests
3. To optimize sustainable utilization and benefits from the pelagic fishery
4. Develop and improve governance of the pelagic fishery

3. SCOPE OF THE MANAGEMENT PLAN

The scope includes those fishing activities that involve artisanal fishers targeting small and medium sized pelagic fish and encompasses the relevant inshore marine areas of the Kenyan Exclusive Economic Zone. The scope and values of the Plan is set out as an Annex.

This Management Plan has been informed by a Baseline Study and an Ecological Risk Assessment (ERA) carried out by the EAF National Task Group. The reports constitute an integral part of this Plan. The management plan is based on the following processes:

- Key issues relating to management, sustainability of fish stocks, impacts of fishing operations on the ecosystem, resource sharing among stakeholder groups, and governance of the fishery
- A set of agreed objectives that are understood by stakeholders, are measurable and relate to the identified key issues.
- Assessment and evaluation of each objective through agreed indicators and reference points
- Agreed process for decisions to outcomes of activities aligned to the objectives.
- Validation by stakeholders and legitimization

4. DESCRIPTION OF THE FISHERY

4.1 Area fished and fishing methods

This Management plan covers the area shown in Figure 1, extending along the entire coastline, a distance of 640 km, however concentrates on the area within 12 km of the coast.

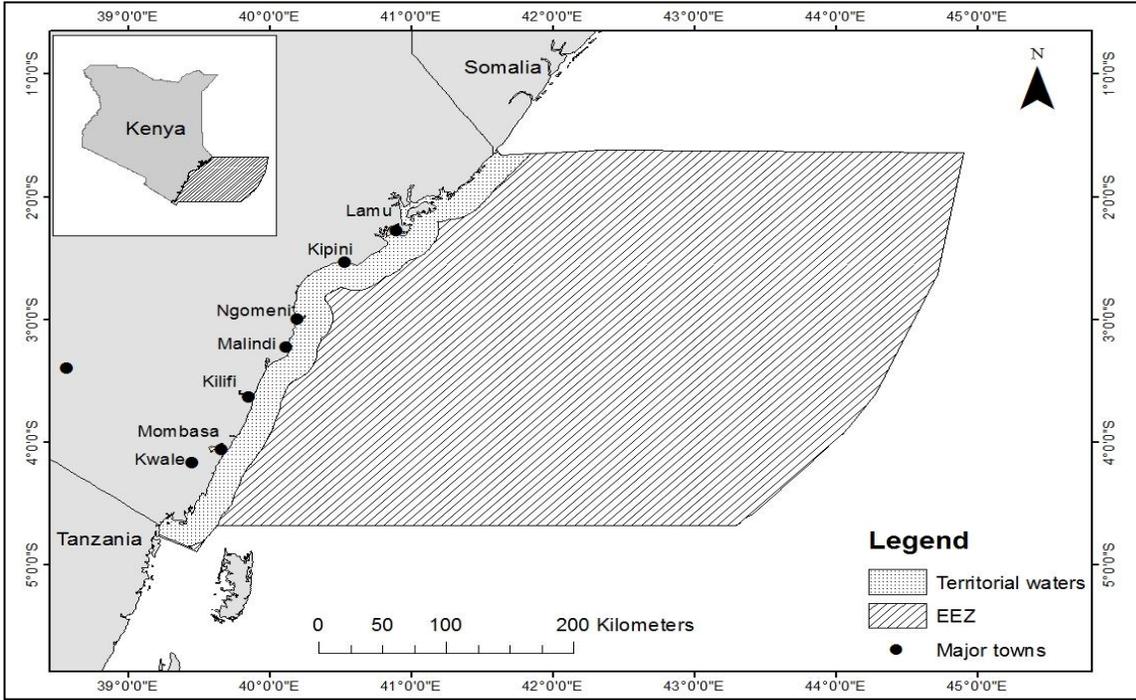


Figure 1: Kenyan EEZ

It is estimated that that pelagic fishery accounts for 18% of the marine fishery landings, with 80% of the total marine products from shallow coastal waters and reefs, and about 20% from off-shore fishing. The majority of marine fishing in Kenya is small-scale artisanal that operate in the coastal near-shore waters. This area is reported to have a potential to yield ~20,000 mt per year, however the annual marine catch from reef areas is thought to be closer to 12,000 mt per year. The pelagic fishery (last 20 years) accounts for about 25% of the landings, varying between 977 mt and 2096 mt. The fishery operates most effectively during the NE Monsoon when non-powered boats can venture into open waters.

The contribution of teleost in landings is variable in terms of gear and location. The commonly harvested fish include the rainbow sardine, white sardinella, barred needle fish, rainbow runner, trevallies, mackerel scads, chub mackerel, indian mackerel, stripped bonito, queen and king mackerel, great barracuda, mullets and milkfish.

There are several fishing techniques used for exploitation; inshore gill nets (set and drift), fence traps (“Uzio”), cast nets, seine nets (reef seine, beach seines) and hook and line are commonly used close inshore. Conversely long lines, troll lines and ring nets (small purse seine) are usually operated offshore. Ring nets are particularly productive during the north east monsoon, with a bycatch of demersal reef fish.

Productive areas include Vanga, Shimoni, Gazi, Mtwapa, Kilifi, Takaungu, Lamu, Mayungu, Ngomeni and Kipini, Watamu.

4.2 General ecological considerations

Interaction of the pelagic fishery with other fisheries is mainly seen through capture of by-catch and demersal reef species by various fishing gears. Apart from targeting pelagic, gears such as beach and reef seines and ring nets also target demersal reef fish species such as rabbit fish, job fishes, emperors, goat fishes, sweetlips and parrot fish.

Although not quantified, the current fishing methods are having a detrimental impact on the general ecology of the near shore environment. Of particular concern are the large amounts of bycatch (mainly juvenile fish but also marine mammals and sea turtles on occasion), destructive fishing gears, ghost fishing and some loss of habitat.

4.3 Importance of the fishery in the national economy and wellbeing of coastal communities

The coastal strip of Kenya is an area with rich cultural traditions in the form of social attitudes, beliefs, taboos, sacred sites, principles and conventions of behavior and practice derived from historical experience. Some of these traditions, particularly those practiced by fishing

communities, have been known to have positive impacts on fisheries management though not formally recognized in fisheries management plans. Studies on traditional community-based fisheries management systems along Kenya's coast are limited and there is a need for comprehensive studies to harness the potential usefulness of traditional management systems or local traditions as a tool for local fisheries management.

Competition on the use of coastal areas between various resource users targeting pelagic fish such as fishers using destructive fishing methods (beach seine and ringnets) versus other fishers is evident. Conflict between the artisanal and commercial fishers/sport fishers have been reported in fishing areas such as Watamu banks and Ungwana bay. Establishment of MPAs and community conservation areas has also created conflicts among resource users and managers.

It has been reported that for 2012 the six fish processing establishments along the coast employ 552 workers, although there are some 86 000 people directly dependent on the artisanal fish resources. The domestic fish market is not well defined and organized infrastructure is poor. Fishers sell fish at the beach to small scale traders who sell to various open-air markets further afield. It is evident that intervention is required to maximize benefits to the coastal communities.

Some fish sold to fish traders is processed by Artisanal Fish Processors (AFPs) who prepare dried, fried and smoked fish for domestic market, however, as opposed to demersal species, pelagic fish resources offer limited industrial employment opportunities to local communities

4.4 Compliance and enforcement

The fisheries regulations provide for the Ministry of Fisheries Development to develop various measures for monitoring, control and surveillance (MCS) of the Kenyan fishery. However MCS capability remains hampered by lack of registration of all fishers and gear and capacity (trained officers and equipment) and requires urgent attention.

5. OPERATION AND REPORTING ON THE MANAGEMENT PLAN

5.1 Key Policy Drivers for the Management Plan

This Small and Medium Pelagic Fishery Management Plan is consistent with the relevant requirements of the FAO Code of Conduct for Responsible Fisheries, Ecosystem Approach to Fisheries, Ecological Sustainable Development, the 2002 Plan of Implementation of the World Summit on Sustainable Development (and as amended at RIO+ 20 in 2012), the precautionary approach, the Convention on Biological Diversity, and other appropriate instruments.

The Fisheries Act Cap 378 provides for management measures in fisheries management. Further, the Fisheries Bill 2012 provide for “the conservation, management and development of fisheries and other aquatic resources; and for connected purposes”. The fisheries Bill recognizes that Management plans are to be developed with the participation of stakeholders to enable

ownership and therefore enhance compliance and the important of proper management of Data and information which are key elements of the fisheries plan

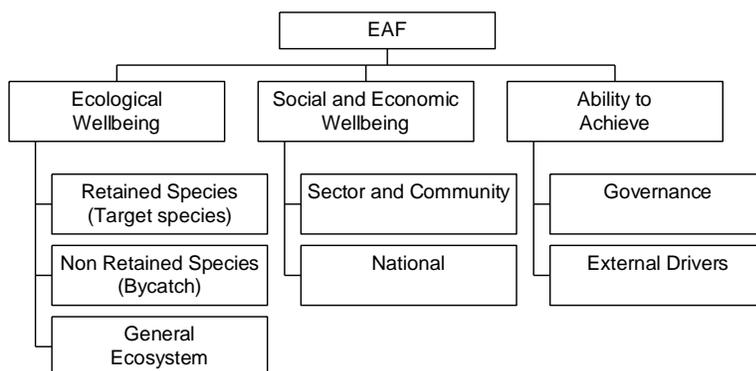
The small and medium pelagic fishery management plan is anchored on the National Oceans and Fisheries Policy 2008 whose overall objective is “to enhance the fisheries sector’s contribution to wealth creation, increased employment for youth and women, food security, and revenue generation through effective private, public and community partnerships”

The plan is also linked to Kenya Vision 2030, the government social-economic and political development blueprint. The Vision 2030 is a national long-term development strategy that seeks to transform the country to a globally competitive middle-income country, with a high quality of life for all Kenyans. It is in congruence with the Agriculture Sector Development Strategy (ASDS), and the Ministry of Fisheries Development strategic plan

It is also expected that improved fishery management will have a significant impact on efforts to achieve Millennium Development Goals (MDGs) in Kenya, and especially to reduce by half the proportion of the human population that suffers from hunger and malnutrition. The challenge is to ensure that those who depend on fish for food and livelihoods, particularly coastal/marine populations, continue to get these important benefits.

5.2 Observation on Ecological Risk Assessment for the Fishery Management Plan

To help determine the issues for this fishery a set of component trees that covered each of the seven key areas of EAF was used. Each of the seven key areas had a detailed component tree where potential issues were included based upon the documentation that was available for the fishery and based upon experiences of the NTG on what issues were relevant.



Each of the trees were examined and modified by adding any relevant issues not already included and deleting any issues that were totally irrelevant. The risk associated with each issue

is assigned to one of three categories – High, Medium or Low. Detailed results are provided in the ERA report.

Based on the outcome of the assessment those issues given a high or medium risk were further condensed into the following generic issues:

1. Ecological wellbeing:

- 1.1 Effectively open access system for the capture of small and medium pelagic species, and concomitant lack of adequate management measures and effect on the ecosystem.
- 1.2 Patchiness of information necessary to understand both anthropogenic and fisher effects.
- 1.3 Damage to the reef systems, including use of chemicals
- 1.4 Catch of juvenile fish: lack of gear restrictions
- 1.5 Climate related changes (General increase in water temperature and coral bleaching, algal blooms)

2. Community wellbeing:

- 2.1 Lack of use of information on traditional knowledge for management
- 2.2 Conflict between fishers using different gears and with the commercial fishery
- 2.3 Lack of economic and social information on the all aspects of the fishery.
- 2.4 Poor communication between fishers and Government
- 2.5 Lack of understanding of fisheries management by the fishing sector.
- 2.6 Lack of infrastructure, fishing (new gear), processing and marketing skills
- 2.7 Lack of alternative livelihoods in some cases
- 2.8 Inadequate capacity to oversee safety at sea

3. Ability to achieve:

- 3.1. Clear detailed policy required to inform the Management Plans
- 3.2 New ACT not yet signed into legislation
- 3.3 Management capacity and facilities lacking
- 3.4 Research capacity, infrastructure and equipment require attention
- 3.5 Inadequate financial planning of the management requirements for the sector: both Gov. and NGO's
- 3.6 Inadequate awareness of Government, fishers and general public of the need to ensure ecological wellbeing in the inshore waters of Kenya
- 3.7 Data management strategy requires revision.
- 3.8 Unclear mandates for safety at sea
- 3.9 Little management of fishing gear
- 3.10 Inadequate planning of specific management measures
- 3.11 MCS requires re-assessment and revision
- 3.12 Co-management initiatives require revision, particularly area bound management
- 3.13 Fees and levies structure requires restructuring
- 3.14 Funding implications to implement the management plan

5.3 Management and Operational Objectives for the Fisheries Management Plan

The management objectives of the fishery as outlined in the Rationale are given below. With these overarching management objectives in mind, and from the key issues identified, clear operational objectives set within a five year planning domain were developed. The management and operational objectives are as follows:

Management objective 1: To optimize the social and economic benefits of the fishery to the people of Kenya

Operational objectives:

- 1.1: Effective rights based management introduced
- 1.2: An economic development strategy for the fishery in place
- 1.3: Traditional knowledge is an integral component of management
- 1.4: An adaptation strategy for climate change is in place

Management objective 2: To ensure the long term sustainability of the resource

Operational objectives:

- 2.1: Substantive and effective data informed by agreed assessment and management practices
- 2.2: Gear used is appropriate and does not result in substantial damage to the ecosystem

Management objective 3: To develop and improve governance of the fishery locally, nationally and regionally

Operational objectives:

- 3.1: There is adequate staff to implement the management plan
- 3.2: Effective motoring, surveillance and compliance in place
- 3.3: An effective fees and levies structure exists with clear guidelines for the use of available funds.
- 3.4: Adequate financial planning exists for the implementation of the management plan

5.4 Processes, strategy and performance indicators for the Management Plan

A detailed strategy to ensure the specific objectives are met was formulated through a workshop of the NTG. Included in the strategy are clear responsibilities and time frames for each activity, set out in Table 1.

A key decision by the NTG was to note that it was not possible to introduce revised management measures immediately into this document, and to set revised specific management measures it will first be required to revise key policy objectives for the artisanal fishery, particularly in terms of a discussion of rights based management, and ensure any changes are compatible with the new

ACT. Once this is complete a cost benefit analysis of possible options, and a revision and prioritization of management measures (Table 1) will be possible.

To facilitate this process, the NTG spent time considering both existing and new specific management measures as for future discussion, which included: limited entry, catch limits, gear restrictions, spatial and seasonal closures, revised data (biological, social, economic) management including collection of data, storage, analysis and dissemination of results, new stock assessment measures if appropriate, surveillance and compliance measures, appropriate monitoring (including physical and chemical oceanography), co-management (including the BMU's), measures for bycatch reduction, and measures to improve efficiency during harvesting and post-harvest.

It was also noted that for the first operational objective to be met will require that activities are carried out sequentially, allowing the Implementation Committee to easily assess the progress of each activity.

A simple log frame, providing identified issues, the strategy and activities, and indicators and reference points are set out in Table 2. This allows the Implementation Committee to quantify progress achieved, and request intervention where required, to ensure targets are met.

Table 1: Operational objectives, issues, strategy, activity and time frames associated with the Management Plan

Management and Operational objective	Identified issues for management numbering set out for cross-referencing with the Key Issues identified	Strategy	Activity	Responsible and time frame NTG TO REVISE TIMELINES, changed some
<p>Management objective 1 To optimize the social and economic benefits of the fishery to the people of Kenya</p> <p>Operational Objective 1.1 Effective rights based management introduced</p>	<p>Open access system for capture of small and medium pelagic fish species, and concomitant lack of adequate management measures.</p> <p>1.1, 2.1, 2.2, 2.4, 2.5, 3.1-3.3, 3.5, 3.6, 3.7, 3.9, 3.10 and 3.12</p>	<p>Inter-governmental and key stakeholder workshops to discuss roles and responsibilities pertaining to the key policy objectives with regard to the fishery sectors</p> <p>To revise key policy objectives</p> <p>Update and refine registration for all fishers, vessels and gear.</p> <p>Discussion of rights (permits, licenses) allocation strategy</p>	<p>Set up a first workshop with all relevant Government agencies involved</p> <p>Develop a policy document, extensive consultation, ensure compatible with the ACT</p> <p>Harmonization of registration process for artisanal and sport fishers (id cards), vessels and gear. Register vessels via Kenya Maritime Authority and engines in tandem with fisher registration (sort out vessels and fishers entering from neighboring countries)</p> <p>Extensive consultation,</p>	<p>Director FID, two national per year at senior level, others at county level. First national meeting by May 2013</p> <p>Director FID, by September 2014</p> <p>Director FID, commence January 2014, complete by December 2014</p> <p>Director FID to Liaise with KMA on vessel and engine registration</p>

		<p>To revise the co management approach, including BMU's, Series of workshops with all stakeholders.</p> <p>(Note this is in conjunction with a revised MCS strategy)</p> <p>Prioritize and introduce a revised suit of management measures. A cost=benefit analysis (see section 6) will be used in the decision process</p> <p>Monitor the preparation and implementation of the Management Plan</p>	<p>agree on a policy, implement new system.</p> <p>A series of Workshops, work with existing initiatives ; management approach agreed and implemented</p> <p>Consultative workshops to agree and prioritize specific management measures</p> <p>To decide on the compilation of an implementation committee, must include private sector. Also work closely with Technical Working groups</p>	<p>Director FID, commence by January 2015, complete by January 2016</p> <p>Director FID, commencing January 2014, complete by 2015, implemented by 2016</p> <p>Director FID: commence January 2015, complete December 2014</p> <p>Director FID, in consultation with the NTG</p>
Management objective 1 To optimize the social and economic benefits of the fishery	2.6,2.7 Economic development	Revise current harvesting and post harvest strategies	Approach donors, appoint a service provider	Director FID, 2014

to the people of Kenya Operational Objective 1.2 An economic development strategy is in place				
Management objective 1 To optimize the social and economic benefits of the fishery to the people of Kenya Operational Objective 1.3 Traditional knowledge is an integral component of management	2.1, 2.4 Collation of traditional knowledge and customs pertinent to co-management and area bound management	Ensure all information is used in compilation of management measures	Appoint a service provider, secure funds	Director FID: commence in 2013, complete by January 2014
Management objective 1 To optimize the social and economic benefits of the fishery to the people of Kenya Operational Objective 1.4 An adaptation strategy for climate change in place	1.5 Climate change	Assess the requirements of Kenya against the studies being undertaken in the region, investigate mitigating and adaptation measures	Workshops to provide advice on research/monitoring and mitigation/ adaptation measures	Director KMFRI to set up workshops, at least one in 2014
Management objective 2 To ensure the long term sustainability of the resource Operational objective 2.1 Substantive and effective data informed by agreed assessment and management practices	1.2, 2.3, 3.4 and 3.5 Patchiness of catch and effort, biological, economic and social data	Conduct a one year intensive monitoring program KCDP project Quantify the effectiveness of current data collection	Work with KCDP and other possible donors, appoint service provider/s. Service provider to work with KMFRI and others to assess current methods in the light of the survey	Director KMFRI to set up a meeting with key partners: January 2013, undertake survey January 2014- December 2014, set up a Pelagic Technical Working Group. Director KMFRI: workshops with all departments, commence January 2015, complete March 2015

		<p>methods(biological, catch and effort, economic, social) management measures, and assessment methods</p> <p>Review directly after the survey</p> <p>Revise all data collection procedures (biological, catch and effort, economic, social) and assessment measures for catch, effort and biological data</p> <p>New long term data collection methods, data management and assessment methods introduced,</p> <p>Develop catching, processing and marketing strategy, alternative investment opportunities</p>	<p>results</p> <p>Service provider and workshops, data collection responsibilities agreed. Form a small pelagic Technical Working Group.</p> <p>Work with Fish Marketing Authority, set up project and funds</p>	<p>Director KMFRI, commence with workshops in April 2015, complete by November 2015</p> <p>Director: FID: Fish Marketing Authority</p>
<p>Management objective 2 To ensure the long term sustainability of the resource</p> <p>Operational objective 2.2 Gear used is appropriate and does not result in substantial damage to the ecosystem</p>	2.2, 2.6, 2.7, 3.9 and 3.12 Gear restrictions need to be addressed	Revise current spectrum of gear, harmonize as required	<p>Approach donors, appoint service provider/s</p> <p>Carry out experimental fisheries project, mapping fishing areas</p>	Director FID, commence January 2014, complete December 2015

Management objective 3 To develop and improve governance of the fishery locally, nationally and regionally Operational objective 3.1 There are adequate staff to implement the management plan	2.4, 3.3, 3.4 Capacity and staffing issues	Ongoing: strategize staff appointments and responsibilities if applicable.	A series of meetings involving all applicable government departments and projects - KCDP	Director FID, 2014 onwards
Management objective 3 To develop and improve governance of the fishery locally, nationally and regionally Operational objective 3.2 Effective motoring, surveillance and compliance	3.11, 3.12 MCS strategies, and implementation require assessment and revision	Assess the current MCS strategies against the revised management plan, working with KCDP, and other intra Gov. departments	To realign an effective MCS strategy to the requirements of the Management Plan To introduce the new strategy	Director FID: Workshop in 2015
Management objective 3: To develop and improve governance of the fishery locally, nationally and regionally Operational objective 3.3 An effective fees and levies structure with clear guidelines for the use of available funds.	3.13 Fees and levies require revision	Consult based on the requirements of the management plan. Decide on purpose and usage of funds obtained through fees and levies.	Workshops and discussions, introduce new fees and levy structure, if applicable	Director FID: Initial workshop in 2014
Management objective 3 To develop and improve governance of the fishery locally, nationally and regionally Operational objective 3.4 Adequate financial planning for the implementation of the management plan	3.14 Cost implications	Appoint experts, Produce a financial plan for the implementation of the fisheries management plan.	Select and appoint expert/s	Director FID: undertaken in 2015

TABLE 2: LOG FRAME

Identified issues for management	Strategy/activities	Indicators	Reference point
<p>1.1., 2.1, 2.2, 2.4, 2.5, 3.1-3.3, 3.5, 3.6, 3.7, 3.9,3.10 and 3.12 Open access system for capture of small and medium pelagic fish species, and concomitant lack of adequate management measures.</p>	<p>Substantive Awareness campaign using local languages, using BMU networks where appropriate</p> <p>To formulate draft key policy objectives</p> <p>Inter-governmental and key stakeholder workshops to discuss roles and responsibilities pertaining to the key policy objectives with regard to the fishery sectors.</p> <p>Discussions with sport fishers around fishing ground access</p> <p>Harmonize policy and legal, administrative, infrastructure requirements</p> <p>Registration of fishers, vessels and gear</p>	<p>Number of fishers briefed, public meetings, TV, and radio programs</p> <p>Key policy agreed to</p> <p>Existing and new roles and responsibilities defined for all sectors</p> <p>Successful arrangements between BMU/s and sport fishers</p> <p>Policy and Act updated, revised administration and infrastructure plan</p> <p>Successful registration plan, computerized database, work with BMU's as appropriate, National and local databases in place.</p>	<p>Meetings in each county, At least 3500 fishers approached. One TV program, repeated every few months. Regular radio program, at least one per month</p> <p>Key policy in place</p> <p>Key roles and responsibilities introduced</p> <p>Successful implementation of agreed measures.</p> <p>Revised policy in place Infrastructure in place Administration in place</p> <p>Cut off point for registration adhered to, All fishers (guided by frame surveys), vessels and equipment registered and have licenses, National database in place.</p>

	<p>Formulate an allocation strategy for the artisanal sectors</p> <p>To revise the management approach and BMU's</p> <p>Introduce a suit of management measures for the artisanal fishery Each measure will be subjected to a cost-benefit analysis (see section 6)</p>	<p>Agreed fee structure in place</p> <p>Allocation strategy agreed on, e.g. permits with gear restriction etc</p> <p>Revised co-management approach agreed on</p> <p>Suit of management measures, and decision rules formulated and agreed on.</p>	<p>Allocation strategy introduced into law, All fishers have permits, with clear permit conditions</p> <p>Successful introduction of revised strategy.</p> <p>Successful implementation of management measures</p>
2.1, 2.4 Lack of traditional knowledge incorporated in management plans	Collation of traditional knowledge and customs pertinent to co-management and area bound management	Project TOR set out, funds obtained and implemented, area based database and report completed	Successful database of traditional knowledge and customs, and agreement on how these are to be incorporated into formal management measures
1.2, 2.3, 3.4 and 3.5 Patchiness of catch and effort, biological data, economic and social data	<p>Conduct a one year intensive monitoring program, concentrating on two selected areas.</p> <p>Quantify the effectiveness of current data collection methods (catch and effort, biological, economic, social) and management measures, revise assessment methods, revise data collection procedures for catch, effort and biological data</p>	<p>Monitoring program designed and implemented</p> <p>Data collection methods (catch, effort, biological, social, economic) revised</p> <p>Assessment methods revised (stock assessment, stock indicators)</p> <p>Current catching, processing and marketing investigated and intervention strategy completed, with the assistance of the Fish Marketing Authority.</p> <p>Investigate alternative investment opportunities, e.g. mariculture</p>	<p>Successful completion of monitoring program, and database of information</p> <p>Successful data management strategy implemented</p> <p>Revised catch and effort data, biological data, social and economic data collection procedure implemented</p> <p>Revised assessment methods implemented</p> <p>Interventions resulting from catching, processing, and marketing strategy implemented</p> <p>Alternative investment opportunities realized</p>

2.2, 2.6, 2.7, 3.9 and 3.12 Gear restrictions need to be addressed	Understand gear specifications; assess current gear and any ecological damage.	Successful project plan, funds and project implementation and completion	Successful implementation of gear specification standards and restrictions if required
1.5 Climate change	Investigate the likely effects of temperature change and influence on fish assemblage	Workshops completed, regional and national briefing sessions, mitigation/adaptation measures. Ensure incorporation with Regional Climate change Initiatives	Agreed mitigation/adaptation measures introduced
2.6, 2.7 Economic development	Assess possible options to increase economic potential of the catch, set up TOR, appoint service provider, assess options and implement	TOR completed, service provider appointed, study complete, interventions underway	Interventions successfully implemented, enhanced economic returns
2.4, 3.3, 3.4 Capacity and staffing issues	Complete revision of staffing requirements based on the requirements of the planned interventions	Responsibilities agreed on	New job descriptions in place, staff appointed if required
3.11, 3.12 MCS strategies, and implementation require assessment and revision	Revise MCS strategies, in conjunction with KCDP and SMARTFISH	MCS strategy revised	Revised MCS strategy implemented
3.13 Fees and levies require revision	Revise fees and levy structure	Revised fee and levy structure agreed on	Revised fees and levies introduced.
3.14 Cost implications	Produce a financial plan for the implementation of the fisheries management plan.	Financial plan agreed on	Implementation of the financial plan, new management measures in place

6. COST-BENEFIT ANALYSIS (CBA) FOR THE MANAGEMENT PLAN

In terms of the EAF, the costs and benefits of introducing and implementing the fishery management plan are assessed with a view to maximizing the net national benefits or net economic value from the fishery resources

For the current plan the cost benefit analysis will be most useful once specific management measures have been identified for deliberation (Table 1 under Effective rights based management introduced) and a first cost benefit exercise will be undertaken to allow the management measures to be selected with due cognizance taken of the relative costs and benefits.

Table 3 provides a rough methodology which will be used in order to calculate a benefit:cost ratio. This involves a meeting of key stakeholders, selecting from a range of scores (0-4), where specific management measures are scored against condensed broad objectives provided under section 2 (Rationale), both for the short term (5 years) and long term. These are then summed and benefit:cost ratio obtained for each management measure. Where all cost or benefit scores for a particular time period are zero the average is considered 0.1 in order to calculate a reasonable benefit:cost ratio. This does not imply however that there are no potential costs or benefits ascribed to a particular Management Action, only that it was not reliably quantified.

This must be seen as rough semi quantitative method, providing at least some information useful for making management choices, more refined methodology will be appropriate as economic data becomes available.

Table 3 Methodology for the cost benefit analysis

COSTS AND BENEFITS ACTION SHEET							
Benefit Cost Estimate							
0	Effect will lead to negligible cost or benefit						
1	Effect will have a small but noticeable impact						
2	Effect will have a moderate impact						
3	Effect will result in a major improvement or will have major negative impact						
4	Effect will have an immediate and long-term impact or will be unsustainable from the outset						
Examples: Broad objectives of fishery							
i	Maximise long-term economic and socio economic sustainability of the fishery (e.g. improve catch rates & size structure)						
ii	Manage stocks to ecologically sustainable levels (trophic interactions)						
iii	Rebuild stocks to minimise risk to the resource (recruitment etc)						
iv	Minimise loss of biodiversity due to seabed damage						

v	Develop the fishery to its economic potential (infrastructure, training etc)				
vi	Minimise discard & loss of target species and manage by-catch				
Specific management measures	example: Ban ring nets				
	Short term		Long term		Comments
	Cost	Benefit	Cost	Benefit	
i	0	0	0	0	
ii	0	0	0	0	
iii	0	0	1	0	
iv	0	0	0	0	
v	0	0	0	0	
vi	0	0	0	0	
Average	0.0	0.0	0.0	0.0	
Benefits to Cost ratio	Benefit/cost		Benefit/cost		

7. INSTITUTIONAL ARRANGEMENTS FOR IMPLEMENTING THE MANAGEMENT PLAN

To oversee the implementation of the Plan an Implementation Committee will be established which will meet regularly to discuss progress and suggest changes to the plan, as appropriate. The composition of the Implementation Committee will initially comprise the members of the National Task Group, and the final committee composition will be agreed on at the first meeting. A number of other organizations will form an integral part of the process, including the Kenya Marine and Fisheries Research Institute, Kenya Navy, Marine Police, Kenya Maritime Authority, the National Environmental Management Authority (NEMA), Kenya Wildlife Service, the Coast Development Authority, Beach Management Units and the Kenya Ports Authority. Other important organizations are a number of NGO's and regional and national programs and projects, including SMARTFISH, CORDIO and the Kenyan Coastal Development Project.

Each year, an Action Plan of priority actions to be undertaken will be developed. The annual action plan would also contain a "Communication Strategy" to ensure that all those implementing the plan possess the same information base, interpret it in the same way, and that the results of the implementation are widely disseminated.

The implementation of the Management Plan for the fishery for small and medium sized pelagic fish is a joint responsibility of the Kenyan Fisheries Department (FiD), other relevant line ministries and agencies, research institutions, national fisheries projects, the resource users and

other stakeholders of the fisheries sector. However, in keeping with its mandate, the FiD will regulate, promote, support and guide the implementation of the plan, through broad consultative processes with other stakeholders.

Annex I: Scope and Values of Fishery – Kenyan Artisanal and sport fishery for small and medium sized pelagic fish

Category	Details
Fishery	fishery for small and medium sized pelagic fish
Fishers included	<ul style="list-style-type: none"> • Artisanal • Recreational • Semi industrial (definitions require clarification)
Fishers not Included (but impact)	<ul style="list-style-type: none"> • Ornamental fishers, commercial/ Industrial
Methods included	<ul style="list-style-type: none"> • Gill Nets (set and drift) • Purse Seine • Ring Net/small purse seine • Hook and line • Long lines • Troll lines • Fence traps (“Uzio”) • Seine nets (reef seine) • Cast nets
Methods not included but impact	<ul style="list-style-type: none"> • Pelagic Trawl • Gleaning • Scoop net • Destructive and all illegal methods as per Fisheries Act (Cap 378)
Species included	<p>Small pelagic fish:</p> <ul style="list-style-type: none"> • Clupeidae (Rainbow sardine, white sardinella, marckerels) • Bellondae (Barred needle fish,) • Carangidae (marckerel scads, chud marckerel) • Scombridae (Indian Mackerel) <p>Medium pelagic fish:</p> <ul style="list-style-type: none"> • carangidae (Rainbow runner, trevallies,) • Scombridae (striped bonito, Queen & King mackerel, Little mackerel,, Indian mackerel, Queenfishes)

	<ul style="list-style-type: none"> • Sphyraenidae (Great barracuda) • Mugilidea (Mulletts) • Chanidae (Milkfish)
Species not directly included	<ul style="list-style-type: none"> • Tuna and tuna like species • (Yellowfin Tuna; <i>Thunus albacores</i>, • Narrow-barred Spanish Mackerel; <i>Scomberomorus commeson</i> • Wahoo; <i>Acanthocybium solandri</i>, • Black Marlin, <i>Makaira indica</i>, • Striped Marlin; <i>Tetrapturus andax</i>, • Indo-Pacific Sail fish; <i>Istiophorus platypterus</i>, Tuna-like species; <i>Scrombroidei</i>) • Coryphaenidae (Dolphin fishes) • Carcharhinidae (Sharks)
Areas Included	Kenyan fishery waters as defined in the ACT
Areas not included but impact	Other countries bordering Kenya
Values – Objectives to achieve and priority	<ul style="list-style-type: none"> • Food security (of fishers and community) • Ecological sustainability • Livelihoods (of people in fishery) • Local employment (of fisheries-related activities – boat building...) • Government revenues • Cultural values
Primary management agencies/groups	<ul style="list-style-type: none"> • Fisheries Department • BMUS • Kenya Wildlife Service - KWS (Marine Parks and reserves) • Kenya Forest Service -KFS (Mangrove forest)
Other Agencies/Groups (indirectly involved)	<ul style="list-style-type: none"> • Defence and security (Kenya Navy) • Judiciary • Provincial administration • Kenya Marine and Fisheries Research Institutes • National Environment and Management Authority • Fisheries training Institutes • Universities • NGOs and CBOs • Kenya Maritime Authority

	<ul style="list-style-type: none">• Maritime Police Unit• Kenya Ports Authority• Coast Development Authority• Local Governments• Ministry of Lands
Time frame(s)	5 years