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## **Assessment of fisheries innovations for investment and financing in Kenya**



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**Assessment of fisheries innovations for investment and financing in Kenya**

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## PREPARATION OF THIS DOCUMENT

This circular was prepared under the Multidisciplinary Fund (MDF) project of the Food and Agriculture Organization of the United Nations (FAO) on “Financing innovation for sustainable fisheries with the private sector”. The project supported fishing businesses in Thailand and Kenya to access formal financial services, enabling them to innovate and use sustainable fishing technologies. This circular presents the project activities in Kenya. Circular No. 1246 presents the project activities carried out in Thailand.

The *Voluntary guidelines for securing sustainable small-scale fisheries in the context of poverty eradication and food security* (SSF Guidelines) (FAO, 2015), inspired the project and provided a framework for the project objectives. The project aimed to contribute to achieving United Nations Sustainable Development Goal 14 (life below water). The project’s objective was to improve access to financial services for small-scale fishers (SSF) in Kenya by means of: 1) a thorough stakeholder analysis including a survey among key players, 2) capacity building of key stakeholders on how to reach SSF with financial services, and 3) establishing a network of stakeholders for exchanging knowledge on financing SSF.

A Letter of Agreement (LoA) to support project implementation in Kenya was signed by FAO and the African Rural and Agricultural Credit Association (AFRACA) in March 2021. The project was implemented in 2021–2022 by AFRACA and FAO.

## ABSTRACT

To make small-scale fisheries in Kenya more sustainable, fishers need to invest in responsible fishing operations and technologies, reduce overfishing, contribute to fisheries management, and implement climate change adaptation measures. Small-scale fishers (SSF) often do not have access to financial services to innovate and to make the necessary transition to sustainable fishing operations. Access to financial services will help them to innovate and adopt measures that will provide social, economic and environmental returns, the desired triple bottom line.

Financial service providers can manage the risks involved in credit provision to SSF. Risks can be managed by increasing understanding of the fishing business and by scaling-up innovative solutions to supply financial services to the fisheries sector, such as digital technology platforms and loan appraisal tools tailored to the fishers' needs.

In light of this, the African Rural and Agricultural Credit Association (AFRACA) and FAO, in collaboration with the State Department for Fisheries, Aquaculture and the Blue Economy in Kenya, implemented a project to analyse and improve the access of SSF to financial services in Kenya.

The project identified the key finance- and fisheries sector stakeholders, and carried out online surveys, focus-group discussions and field interviews to analyse the market demand and supply of financial services to SSF in Kenya. In parallel, a techno-economic performance analysis was done of some small-scale fishing fleets, which showed the economic feasibility of small-scale fisheries in Kenya.

During a two-day stakeholder workshop research findings were shared and discussed. Workshop participants agreed to constitute a CAFI-SSF Network Kenyan Chapter, based on the Global network for capacity building to increase access of small-scale fisheries to financial services (CAFI-SSF). This network will be used for communication and exchanging ideas.

Based on the research findings and workshop discussions, AFRACA developed training materials, such as power-point slides, case studies and a story board. A selected group of financial service providers participated in the first training in 2021, which is being replicated in 2022.

This circular presents the project's main achievements in 2021.

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## ACRONYMS AND ABBREVIATIONS

<b>AFRACA</b>	African Rural and Agricultural Credit Association
<b>ASDSP</b>	Agricultural Sector Development Program
<b>ASCAs</b>	accumulating savings and credit associations
<b>BMU</b>	beach management units
<b>CAFI-SSF</b>	Global network for capacity building to increase access of small-scale fisheries to financial services
<b>CDA</b>	Coast Development Authority
<b>ESP</b>	Inclusive Rural Transformation and Gender Equality Division
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FSPs</b>	financial service providers
<b>KeFS</b>	Kenya Fisheries Services
<b>KWFT</b>	Kenya Women Microfinance Bank
<b>KUSCCO</b>	Kenya Union of Savings and Credit Co-operative Societies
<b>LoA</b>	letter of agreement
<b>MDF</b>	multidisciplinary fund
<b>NFIFO</b>	Fishing Technology and Operations Team (FAO)
<b>NGOs</b>	non-government organizations
<b>SACCO</b>	savings and credit cooperatives
<b>SSF</b>	small-scale fisheries
<b>VSLAs</b>	village savings and loan associations



## 1. INTRODUCTION

Worldwide many fisheries resources are either maximally sustainably fished or overfished. To reduce overfishing and unsustainable practices, effective fisheries management is essential. Entrepreneurs in fisheries, particularly small-scale fishers (SSF), often do not have access to adequate financial services to innovate and make the necessary transition to sustainable fishing operations. Access to financial services helps fishing businesses to grow and adopt measures that can provide social, economic and environmental returns, the desired triple bottom line.

An FAO multidisciplinary funds (MDF) project was implemented in two countries, Thailand and Kenya, in 2021–2022. This circular presents some results of project implementation in Kenya. The project supported fishing businesses to access formal financial services. The project worked towards scaling-up the use of fishing technology innovations that have proven successful elsewhere (for example, hybrid vessel engines, bulbous bows, bycatch reduction devices, lighter trawl gears, long-lining technologies and LED light fishing systems) through increasing access to finance.

The Global network for capacity building to increase access of small-scale fisheries to financial services (CAFI-SSF Network) was initiated in 2020 and played an instrumental role in the formulation and implementation of the project. The CAFI-SSF Network provides an interactive platform that catalyses the involvement of key private sector stakeholders (for example, rural banks, agricultural credit associations, fishing companies, fishers' organizations, and financial- and fisheries experts) to share experience and knowledge and promote capacity building. The CAFI-SSF Network aims to increase the availability and access of microfinance, credit and insurance services for small-scale fishers and small-scale aquaculture producers, with the ultimate goal to contribute to a more resilient fisheries sector and improve the livelihoods in fishing and aquaculture communities.<sup>1</sup> The Network carried out background research on financial services provision to small-scale fisheries in Africa (FAO, 2022) and worked closely with AFRACA's secretariat in Kenya on removing barriers to innovation in fisheries and finance. Barriers identified include the low understanding of the unique business characteristics of the fisheries sector and the weak technical capacity that prevents local financial services providers to extend their services to SSF.

## 2. THE PROJECT'S OBJECTIVES AND MAIN ACTIVITIES

The MDF project objectives were aligned with FAO's efforts to support SSF, the SSF Guidelines and the United Nations declared International Year of Artisanal Fisheries and Aquaculture (IYAFA 2022). The project built on the design of previous projects like the "Project to prepare the groundwork for establishing a credit and insurance programme for small scale fishers in the Philippines". The project's main objectives were to:

1. build and strengthen the capacity of financial services providers, fisherfolk organizations, non-government organizations (NGOs) and concerned government agencies in designing and implementing financial services and products that suit the needs of SSF and enhance social protection;
2. guide policy and decision makers in the financial industry with the objective of encouraging investment in the fisheries sector and thus strengthen the sustainability and economic viability of these SSF;
3. promote dialogue among different stakeholders (in particular financial institutions, fisherfolk organizations, fishers);
4. enable SSF to invest in more responsible fishing operations and technologies, reduce overfishing, contribute to fisheries management, and implement climate change adaptation measures.

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<sup>1</sup> CAFI-SSF Network activities are published at: [www.rfilc.org/event\\_organizer/cafissf-network/](http://www.rfilc.org/event_organizer/cafissf-network/)

To achieve the objectives the project conducted the following activities in Kenya:

1. a thorough **analysis of the relevant stakeholders** in the SSF sector. This activity was carried out to identify the stakeholders to be addressed by the survey (activity 2) and to identify institutions that would be potential participants in the formation of a network (activity 3);
2. a **baseline survey** aimed at determining the status of SSF communities as well as providing information on the assistance and support they need for their fishing activities particularly in accessing financing and insurance services;
3. an **analysis of the state of fishing technology used by SSF in Kenya** including scoping opportunities for technological innovations;
4. creation of a space for stakeholders to convene and discuss matters related to financial services and SSF through **workshops and webinars**;
5. **foundation of a national network (CAFI-SSF Kenya Chapter) in support of SSF**. The network should act as a platform where members organize capacity building, exchange knowledge, share good practices, and provide support to other stakeholders to increase the provision of financial services to SSF;
6. **implementation of a training programme** to build capacity of local financial institutions' staff and stakeholders, including the design of a financial model that can be used by stakeholders to estimate the return on investments by SSF into fishing technologies.

The above objectives and related project activities should assist the SSF in Kenya to make the necessary transition towards sustainability, based on a shared triple bottom line of social, economic and environmental returns.

The initial project layout foresaw the design of procedures, forms and checklists that could be used by financial service providers to address the needs of SSF. It was planned to work towards the establishment of a microfinance or credit programme specifically for SSF. However, the analyses revealed that a lack of procedures on the side of the FSPs is unlikely the most pressing constraint hindering investment in SSF in Kenya. The analyses of the financial market for SSF showed that a number of government initiatives for SSF exist and that the reasons for low investments in fishing vessels and fishing technologies are both supply and demand side driven. Establishing a new lending facility without a careful design and engagement with a wide array of stakeholders would unlikely lead to the desired outcome in the wake of this project. The project therefore focused its activities on concrete research driven activities to better understand financial service provision to SSF, and the capacity building activities emerged from this research. The ultimate project outcome remained unchanged: enabling SSF to access financial services to enhance their fishing businesses in a sustainable manner.

### **3. PROJECT IMPLEMENTING AGENCY AFRACA**

The MDF project in Kenya was implemented by the African Rural and Agricultural Association, with technical support from FAO. AFRACA was established in 1977 as a regional association of sub-Saharan financial and non-financial institutions involved in promoting rural and agricultural finance. AFRACA's goal is to build a strong and sustainable regional network of institutions and agencies that provides opportunities for learning amongst its members. AFRACA promotes finance aimed at empowering rural and agricultural communities on the continent. AFRACA's members include central banks, commercial banks, microfinance institutions, farmer organizations, agricultural and development banks, universities, and training institutions. Currently (2022), AFRACA has 110 member institutions in 25 countries as its members. Many of these members provide credit and other financial services to the fisheries sector. AFRACA's vision is a continent where rural and agriculture communities have access to quality and sustainable financial services for accelerated economic development.

## 4. MAIN OUTCOMES OF THE PROJECT

### Activity 1: Stakeholder identification and mapping

To prepare for the field assessment activities, AFRACA undertook a stakeholder mapping exercise. The AFRACA team employed different methods (e.g. phone calls, in-person meetings, desk research) to create a preliminary list of stakeholders. AFRACA also used its network of Kenyan member institutions to identify stakeholders in the financial sector serving SSF. The final list included national government agencies, county governments, fishing associations, fishing organizations (including Beach Management Units - BMUs), fishing gear suppliers, banks, NGOs, savings and credit cooperatives (SACCOs), agriculture and credit associations, microfinance institutions, insurance providers as well as education and training institutions. The mapping exercise classified the stakeholders as follows.

- **National government agencies:** The government's interest is not only to regulate the sector but also to promote its growth. Through some of the government agencies, such as the Kenya Fisheries Services (KEFS) and the Agricultural Sector Development Program (ASDSP), SSF have been targeted as an important industry for development. ASDSP has been instrumental in building the capacity of the BMUs and to enhance entrepreneurial skills. The Program has three priority value chains in each county. Fisheries is one of the identified value chains in the counties of Kilifi, Mombasa and Kwale. Through such efforts, a number of BMUs are already in the process of developing their own strategic and business plans.
- **Financial service providers:** For example, the KCB Bank had a bilateral arrangement with the county governments of Mombasa and Kilifi to procure industrial vessels for the BMUs while Imarika Sacco designed the so called Mtaji loan product to address the needs of SSF.
- **Education and training institutions:** For example, Pwani University, Technical University of Kenya, and Bandari college have ongoing training programmes that include marine studies and technical oriented training courses targeting the fishing sector at large. These institutions also undertake continuous research and development initiatives to generate new knowledge for the sector.
- **SSF related projects being implemented by other agencies:**
  - The *Integrated Fish Resources Development Project* is a project implemented by the Coast Development Authority (CDA). CDA is a state corporation with the mandate to provide integrated development planning, coordination and implementation of projects and programmes within coastal regions. It is guided by the regional development policy as well as the national government's Vision 2030. This project pursues the establishment of marine and aquatic natural resources processing facilities and improvement of management support systems. The MDF project played a complementary role to the initiatives of the CDA.
  - The *Kenya Marine Fisheries and Socio-Economic Development (KEMFSED)* project targets Tana River, Mombasa, Kilifi, Kwale and Lamu counties. This World Bank funded, government led project, seeks to improve the management of priority fisheries and mariculture, thereby increasing access to livelihood supporting activities for the coastal communities.
- Other initiatives by FAO in the region:
- Project *GCP/RAF/520/JPN*: Enhancing livelihoods, food security and maritime safety through increased resilience of fishing communities dependent on coral reef fisheries in the African coastal counties of the Indian Ocean.
- Project *TCP/SFE/3805*: Assistance to strengthen the governance of the fisheries resources of Somalia, Kenya, Djibouti and Eritrea, during and after the COVID-19 crisis.

## Activity 2: Market analysis/market survey

### **Market survey methodology**

The project team designed three questionnaires targeting three different stakeholders: financial service providers (FSPs), Fisherfolk organizations (BMUs), and individual SSF (eventually the survey was opened to include other individuals along the value chain, like wholesalers and retailers).

The survey targeting FSPs assessed the status of provision of financial products and services to SSF. The survey also assessed FSPs' capacity building needs to reach SSF with their services. The surveys administered to BMUs and individual SSF assessed foremost the state of access to credit, financial management skills and finance related capacity building needs.

To identify the FSPs' AFRACA built on its network of members. The Association of Microfinance Institutions Kenya (AMFI), with experience in the coastal region, made referrals to their members based on the nature of the survey. AFRACA's member KUSCCO (Kenya Union of Savings & Credit Co-operatives Ltd.) was instrumental in the identification of other savings and credit cooperatives (SACCOs) in the coastal region. Those SACCOs identified were: Imarika, Tabasamu and Ukulima. The State Department for Fisheries helped with the identification of three BMUs, one in each of the three targeted counties of Kilifi, Mombasa and Kwale.

The survey to FSPs was administered through the online survey tool Survey Monkey © and followed-up on with phone calls or in-person meetings whenever necessary. **23 FSPs** positively responded to the survey. To validate the responses, the AFRACA team eventually decided to meet most of the FSPs for additional virtual or in-person interviews.

The SSF were identified through their BMUs, which engaged them upfront to prepare them for the interviews scheduled. AFRACA used three local enumerators who were trained to help in the administration of the SSF interviews in the local language (Swahili). The in-person questionnaire was answered by **118 individual SSF**, including fishers, boat makers, fishing boat owners and traders.

A team from AFRACA visited the three target counties of Kilifi, Mombasa and Kwale to engage with some of the respondents. Ultimately, the team met with **4 BMUs** who were willing to participate in the survey. The survey was conducted through focus group discussions in which the leadership and members of the BMUs participated at Bamburi, Kilifi and Shimoni beaches.

Overall, the number of responses to the survey was highly satisfactory.

A comprehensive summary of the survey results can be found in Annex 1 of this circular.

### **Summary of survey outcomes**

#### *Financial service providers (FSPs)*

Survey results showed that there is adequate coverage by FSPs along the Kenyan coast. Some FSPs have several branches that can serve the fishers.

The most important product of FSPs (and reportedly with the highest consumer appetite as well) is short-term loans. However, less than 1 percent of these loans go to fishers. 30 percent of the FSPs report having specific products for the fisheries sector. Other FSPs reported to address the sector through general agriculture loan products. Only two institutions employ specialized personnel for SSF, which suggests that lending is in fact not geared towards SSF. The recent loan performance in the fisheries sector is rated as bad by most of the FSPs. Thus, provision of credit to SSF is overall, at best, half-hearted. The FSPs report only limited challenges in repayment, which can probably be traced back to

their overall limited portfolio exposure. There are few long-term loan facilities (as these are currently not used by SSF). Other financial services available to fishers at the coast include checking and savings accounts.

The general view by most of the FSPs is that they have not ignored the sector and they are yet to see a strong business case emanating from the sector. At the same time, 90 percent of FSPs think that it is possible to lend to SSF profitably and only 40 percent find it somewhat riskier than other agricultural lending. However, if fishers would be well organized, their access to credit facilities would increase substantially.

Digital financial services are surprisingly widespread and offered by the majority of FSPs. In particular, the high availability of online banking (about 60 percent) and online loan applications (about 50 percent) speaks to a well-developed set of digital services on the part of the FSPs.

From the survey results it was hard to identify capacity building priorities, since all capacity building areas listed were needing improvement. Therefore, it would be useful to explore the capacity building needs of FSPs further during the next phase of the project.

### *Fisherfolk organizations*

The team administered the questionnaire to four fisherfolk organizations, also known as Beach Management Units (BMUs). The BMUs are registered by the State Department for Fisheries, Aquaculture and the Blue Economy under the *Fisheries Management and Development Act* of 2016. The act provides the BMUs with a mandate of managing fisheries resources in collaboration with the government. The membership of the four BMUs varied from 155 to 779 persons, with women constituting about 20 percent of the total. The members are mainly skippers and captains of fishing vessels, crew members and fish traders.

The primary funding sources for BMUs are their members' fish levy and government grants, which come in-kind through provision of boats, gears, nets, life jackets and training. All the BMUs confirmed that their funds are not sufficient to support their operations. None of the BMUs had any outstanding loan and neither have they sought for any credit. However, all four alluded to the fact that their members are competent in accessing digital loans offered by mobile network operators, such as Safaricom as well as other digital lenders. Insurance cover for vessels, other major fishing assets and life- or accident cover is not common among the BMU members.

BMUs facilitate a range of services. Services include information sharing among members (4 out of the 4 BMUs), negotiating with the government on behalf of its members (3 out of the 4), supporting buying and selling of production (2 out of the 4) and capacity building (1 out of the 4). None of the four BMUs facilitates credit or insurance services supply to members, because they think offering financial services is not their mandate. However, 75 percent plan to provide credit and insurance in the future (a result that might reveal member expectations from BMUs). Discussions with the BMUs showed that they are the most effective platform through which fishers may be engaged. They are bound to play a catalytic role in the formation of other enterprise-oriented outfits, such as cooperative societies through which the fishers would be able to save and access credit facilities. The cooperatives may also obtain wholesale loans for onward lending to their members as well as an intermediary for provision of insurance services.

### *Individual fisherfolk*

A total of 118 individual fishers (including some fish value chain actors, such as fishmongers) responded to the survey, of which 39 percent were female and 61 percent male. The majority of the fishers were between 45 and 55 years old and the average age was far above the Kenyan average age of 20 years.

Almost all SSF completed primary education; further education is rare. More than 70 percent reported having less than USD 700 annual income, far below the national average income and many reported that that is not enough for their families' basic needs. Savings are mostly small.

Yet, the SSF are quite a digital crowd. Whereas the BMUs have not embraced the use of digital services, for communication and payment services with the fishers, the latter confirmed during the interview that they are already using other digital platforms. Regarding digital finance, 76 percent use mobile money and 30 percent also online banking (this corresponds to the FSPs survey). This presents a sterling opportunity for innovation to enhance the performance of the BMUs to include providing virtual training to its members, digitalize financial management systems, use market information, as well as tracking and communicating with fishers at sea.

The fishers' main sources of financing for their fishing operation are from their own savings and/or family funds. Most of the fishers reported not to be able to access loans from financial service providers. About 70 percent of SSF reported that the reasons for not getting a loan are interest rates that are too high and/or a bad service on the part of the FSPs, meaning the perception of FSPs by SSF in the survey is quite negative. Beyond the survey, there was a general negative attitude towards FSPs linked to what SSF called a "ruthless" debt recovery process that has instilled among them a general fear of borrowing. Fishers also have the perception that current credit facilities are not favourable to them and are aligned more towards traders.

The training needs prioritised by the SSF are marketing and selling of fish, followed by training on personal finances (also how to get a loan). Fishing technology training ranks only third.

### **Activity 3: Analysis of the state of fishing technology used by SSF in Kenya**

The full report on fisheries technologies and innovations for investment and financing can be found in Annex 2 of this circular.

An assessment of small-scale fishing fleets in three coastal counties (Kilifi, Kwale and Mombasa) was carried out with support of the MDF project. The assessment aimed to provide a snapshot of marine capture fisheries operations in Kenya, and to identify options for innovation and improvements in small-scale fisheries. It is based on the findings of field visits in July 2021 and a stakeholder workshop, held in Mombasa on 11–12 August 2021.

The current marine fishing fleet of small-scale vessels is composed mainly of wooden hull vessels and a majority is not motorized. The vessels are of various traditional types and the length ranges between 4 and 15 metres. The motorized vessels commonly have outboard engines of 15 to 60 horse power. Onboard ice and fish storage facilities are limited and few vessels have any deck equipment. The crew is composed of 4 to 20 persons, depending on the vessel size. The vessels are commonly owned by the fishers themselves. The fishers normally carry out day-trips and fish for an average of 140 days per year. The main fishing season runs from September to April.

The average investment in a 12 metre wooden vessel, outboard motor and equipment in Kilifi is around USD 6 000. A 12 metre wooden vessel and related equipment in Kwale requires an initial investment of USD 17 000. A 7 metre fiberglass boat and its equipment costs in Mombasa some USD 20 000. The average revenues of the fishing vessels mainly came from sale of landed fish, but the Kwale vessels also got substantial earning from tourism and transport operations. Average earnings of small-scale fishing vessels in 2020 were USD 27 000 (Kilifi), USD 47 000 (Mombasa) and USD 42 000 (Kwale). Vessel earnings of average vessels in 2020 were thus higher than the original investments made. Labour costs and running costs were the highest cost categories for the vessel owners.



Small-scale fishing vessel operations in Kilifi, Mombasa and Kwale counties were (on average) highly profitable in 2020. The profit indicators, such as net cash flows, net profit margins, returns on investment and gross value added by the vessels in the fleets operating in these counties, were all highly positive.

The small-scale fishing operations are constrained by limited near shore fisheries resources, as the resources in reef and near shore areas are overexploited. The simple technologies applied are resulting in low catches, low quality of fish and accidents at sea.

The fishing operations of small-scale vessels could be much more efficient with investment in upgrading the vessels, motors, gears and navigational equipment. The fishers' proposed upgrading will certainly increase fish landings, contributing to food security, income and employment along the value chain. An undecked fiberglass reinforced plastic (FRP) vessel of 7–9 metres with an outboard motor of 75 HP, ice boxes, and modern navigation, communication and safety equipment would require an investment of approximately USD 30 000 to 40 000. The interest to invest in upgrading the fishing operations is high among small-scale fishers. However, the technology readiness level of fishers for adapting the innovations is low. Capacity building is required in technologies and financial services (e.g. savings, micro-finance and credit) to make the investment a success. Currently only few fishers have a bank account and even less are organized. It will take a combined effort of fishers, financial service providers and the government to unlock the potential of the small-scale fisheries sector to increase its production and the financial, economic, environmental and social returns from fishing operations.

#### **Activity 4 and activity 5: Creation of a space for exchange among stakeholders and establishing a local network**

##### ***Validation workshop***

A comprehensive summary of the workshop and its results can be found in Annex 3 of this circular.

After the stakeholder analysis and the surveys, the project team organized a workshop to present and verify the results of the prior activities (including the technological analysis) and invited a diverse group of stakeholders to voice their opinions and experiences. The workshop was prepared through the collaboration of AFRACA, FAO and the Government of Kenya through the State Department for Fisheries, Aquaculture and Blue Economy. Key stakeholders from the financial and fisheries subsector were invited for the two-day workshop held from 11–12 August 2021 at Beaumont Resort in Mtwapa (Kilifi County).

The workshop kicked-off with presentations on the preliminary findings, followed by interventions of other stakeholders from the financial sector and from the fisheries side. In the spirit of providing a platform for exchange and networking, breakout sessions were organized in which fishers and FSPs had the chance to discuss among and with each other. The workshop presented the field study and survey findings on current fishing technologies and innovations as well as the assessment of financial service provision to SSF in Kilifi, Mombasa and Kwale. Key messages from the discussions were that current fishing methods have a detrimental impact on the ecology of the nearshore marine environment, especially the substantial amounts of by-catch. Further, to make the SSF subsector more attractive to financial sector players, the sector needs to be better structured. This would help SSF gain identity as an organized sector with hierarchical structures that ensure discipline among members. It would also stimulate more investment that can help SSF in the transition from artisanal to semi-industrial fishing operations. It was highlighted in the workshop that there is a strong need to upgrade the fishing vessels and gears to be more environmentally friendly and to enable fishers to go further offshore and target large pelagics and more diverse types of fish.

When sharing the survey findings, most fishers confirmed that their annual incomes were insufficient to take care of their household needs. Their primary sources of financing are from their own savings and family funds, with most of them not being able to access loans from financial service providers. During the workshop, however, some participants also disputed the survey's finding on the average income bracket of fishers. Some were of the view that individual fishers' earnings were considerably higher than the USD 700 annual average from the survey.

Fishers confirmed the view that current loan models or products developed by financial institutions are unsuitable and not designed for them. Banks and microfinance institutions, on the other hand, consider the fishing industry (and in particular marine fisheries) as a risky area of investment. There was some discussion on the arrangement for fishers' safety at sea. No defined structure or programme exists to promote or provide life- or vessel insurance coverage, training on safety at sea or a search and rescue service.

The workshop featured a panel discussion with representatives of various stakeholders to present their organizations' work: Imarika SACCO, Ustadi NGO, ASDSP, Bamburi BMU, Kenya Women Microfinance Bank, KUSCCO and Captain Andy's (see Annex 3 for an overview). During the panel discussion, Imarika SACCO (a savings and credit cooperative) reported that they have a specific loan product that targets SSF with an interest rate of 1 percent per month on a declining balance. The loan product is also available to BMU members as long as they can co-guarantee each other. Yet, SACCOs engage only with members who save with them. The poor savings culture among the SSF directly correlates to this. There is a need for more financial literacy of SSF. Since its launch, however, the loan product has been poorly patronized by SSF. Ustadi NGO suggested that a key element in developing the business of SSF will be to help them grow an entrepreneurial mindset.

The workshop confirmed the survey findings that financial service providers in principle have the means to reach out to SSF. Despite the low uptake of loans by fishers, it was encouraging to note that some of the efforts by FSPs already have financial products targeting the SSF sector. A few organizations also have group loan products targeting borrowers with insufficient collateral. Solidarity groups and social guarantees is also a widely accepted form of collateral among microfinance institutions. It was noted that grants and cheap loans have dominated the SSF sector for some time. This generated a high dependency by fisherfolk communities on free money. These communities may not readily embrace commercially available credit facilities. The FSPs desire higher quality loan applications from the fisheries sector and a higher degree of organization of the latter. A few FSPs noted they were ready to impart financial literacy skills to fishers as long as they express interest and are organized. However, the workshop also revealed the need to accustom FSPs with the marine fisheries sector to be able to help them create the high quality demand that they would like to see.

To enhance communication among participating stakeholders and continue the discussions, participants agreed during the workshop to constitute a network to be referred to as CAFI-SSF Kenyan Chapter, which will be used for communication and exchanging ideas.

### ***CAFI-SSF Network Kenyan Chapter***

The inauguration of the CAFI-SSF Network Kenyan Chapter (based on the global network for capacity building to increase access of small-scale fisheries to financial services, CAFI-SSF) was thus an output of the national stakeholder's workshop. Participants of the workshop were cognizant of the absence of any similar initiative through which stakeholder engagement could be promoted.

As a nascent initiative open to SSF in Kenya, the network will lobby and advocate for the interests of SSF in Kenya. It will also address the capacity building needs identified during the implementation of this project. So far, there has been engagement among the pioneer members of the network through a WhatsApp group.

## Activity 6: Training and capacity building

The updated training material can be found in Annex 4 of this circular.

Based on the experiences gained during the previous activities and in line with the project objective of building capacity among key stakeholders, AFRACA designed capacity building training material. Against the backdrop of AFRACA's network within the finance sector and the fact that financial service providers (FSPs) are key to achieving the project's objectives, the project team decided that FSPs were the most fitting target audience for the training activities

The objective of the training was to provide the FSPs with information on SSF and the potential role of FSPs in promoting innovation and investment in the SSF sector in Kenya.

The three-day training activity for the FSPs was held in Mombasa County in November 2021. A further aim of the activity was to pre-test the training manuals and to gather feedback from the FSPs to improve the materials. The following table summarizes the training's main elements (Table 1).

TABLE 1  
Summary of main training elements

Chapter and Units	Content
<b>CHAPTER 1: Overview of the Kenyan small-scale fisheries subsector</b>	
The chapter is structured in two units. <b>Unit 1</b> focuses on the regulatory environment of the fisheries subsector in Kenya and its importance for the Kenyan economy. <b>Unit 2</b> of the chapter gives an overview of the SSF value chain outlining the full range of activities required to bring marine fish from harvesting to the final consumer. The objective of this chapter is to build a general understanding of the SSF value chain prior to any financing intervention.	
<b>Unit 1</b> Fisheries contribution to the Kenyan economy	The section provides a brief overview and relevant data on the contribution of the fisheries sector to the overall Kenyan economy.
Overview of the Kenyan fisheries' regulatory environment and the blue economy	The section looks at the current role and structure of the Kenyan government and state agencies involved in the management, development and conservation of the fisheries subsector. The importance of the blue economy is also introduced in the section.
The Kenya fisheries subsector–national challenges	Broad challenges constraining the growth and development of the subsector are highlighted in this section, such as credit provision to the sector.
<b>Unit 2</b> Features of the Kenyan SSF value chain	The unit aims to provide an understanding of the small-scale marine fish value chain. It identifies the role of the various actors in the chain, processes related to it and other value chain issues. The section also provides an overview of existing technology and equipment used by SSF and possible technological solutions.
<b>CHAPTER 2: Role of financial service providers in promoting innovation and investment in the Kenyan SSF subsector</b>	
The Chapter is structured in two units. The emphasis under <b>Unit 1</b> is to provide guidelines useful in the overall credit assessment of small-scale fishers. It looks at both the supply and demand side, challenges, risk assessment strategies and identifies opportunities for investment in SSF. <b>Unit 2</b> of the chapter proposes capacity building strategies while lending to SSF. The unit assumes that most financial sector players already provide financial literacy to their borrowers, so the recommendations under this unit are supposed to complement ongoing capacity building efforts	
<b>Unit 1</b> Overview of climate change impacts on marine fishing	This section provides an introduction of climate change impacts on marine fishing as a rationale for the participation of financial sector players in SSF.
Existing models for provision of microfinance services and capacity building to SSF in Kenya	This part of the unit provides an overview of the financial landscape based on the credit needs assessment survey that was conducted by AFRACA and FAO in 2021. It provides examples of existing financial models and products offered by diverse institutions from both the public and private sector.
Challenges in credit delivery to SSF (demand and supply side challenges)	The section highlights both existing and potential challenges in credit delivery to SSF.
Opportunities in credit delivery to SSF	Based on the AFRACA-FAO survey findings, the section outlines potential opportunities that can be used to drive more investments in the SSF sector.
Credit risk assessment for SSF	The section is aimed at providing appraisal guidelines on the credit risks envisaged while lending to SSF and credit risk mitigation measures that can be applied.
Financial modelling and investment opportunities along the SSF value chain (under construction)	This is a practical session based on actual case studies of semi-industrial fishers. The case study demonstrates a business case where adoption of modern technology innovation leads to more profitability. The exercise will provide credit officers with insights on the existing cash flows of semi-industrial fishers that can help them to work out financial projections and help them to make sound credit decisions.
<b>Unit 2</b> Capacity building strategies for financial service providers working with SSF	The unit is brief and is expected to build on the ongoing capacity building efforts by financial institutions. It recommends strategic examples, for instance deposit mobilization strategies that address the issue of a poor savings culture among SSF. The unit provides examples of capacity building strategies that can be used by financial sector players while working with SSF.

Source: Author's own elaboration

## 5. OVERALL RECOMMENDATIONS AND CHALLENGES

**Leveraging on the supply side and creating high-quality demand:** Investment in small-scale fisheries in Kenya is low and financial practices among SSF are often weak. The survey findings and subsequent discussions also seem to suggest that the demand for financial services and insurance from the SSF is low. FSPs regard the demand coming from SSF is not backed by sufficiently professional business practices and that loan applications are of low quality. However, there seems to be some real investment appetite from financial service providers, FSPs (the supply side) to invest in the sector, particularly in semi-industrial fisheries development. The appetite for investment by FSPs requires leverage and if further enhanced could catalyse the necessary innovation that is required to promote sustainable fishing practices in SSF. FSPs need to be actively engaged in trying to help create the high-quality demand for financial services they would like to see coming from SSF.

Side note: The definition of SSF is often based on boat size. Some of the BMU members interviewed were traders, processors or carried out other associated services in the value chain and do not fit this definition. When designing financial products for SSF, FSPs should be clear about the target group and its definition.

**Better understand SSF cooperatives and strengthening the role of BMUs:** Most of the fishers' cooperative societies are formally established, but dormant. The cause of their dormancy needs to be better understood. Working in collaboration with the respective county directorates, an assessment of their status should be undertaken and appropriate restructuring and capacity building should be done to enable them perform better. Cooperative societies seem to be a suitable conduit for local resource mobilisation and sustainable organization among fishers. The promotion of digital finance should be part of their operations. BMUs should be supported in their activities and strengthened to support the formation and formalization process of cooperative societies.

**Adoption of Islamic finance by FSPs:** A large part of the population in the coastal area and in the SSF sector are of the Islamic faith. There are FSPs, such as the KCB Bank, that already have Sharia compliant products, though these products are not geared to SSF. The potential growth of the SSF sector thereby provides a business opportunity for the FSPs to develop such products that would respond to the need of this category of clientele.

**Income analysis of individual fisherfolk:** The household incomes of SSF require further investigation. A high rate of credit is accessed through mobile money platforms, for example M-PESA (Fuliza and M-Shwari) and through informal sources, such as table banking groups, merry-go-round and Village Savings and Loan Associations (VSLAs), which might point to a higher income compared to what was stated by SSF in the survey.

**The ownership of fishing equipment and vessels:** The study observed the customary practice of multiple ownership in SSF, for example a boat and fishing gear (e.g. nets) often have several owners. Multi-ownership of such assets can be a high-risk factor while extending asset financing to SSF. This is even further compounded by the lack of insurance.

**Supply chain inefficiencies:** Consumer patterns by most of the communities residing at the Kenyan coast point to supply chain inefficiencies. For example, many fishmongers only trade during the evenings and much of the fresh seafood is consumed during this period of time. Ironically, freshwater (i.e. non-local) fish like tilapia is readily available round the clock. Changing consumption patterns and creating the needed day-round supply may require a larger campaign in collaboration with government agencies to promote locally available fish of high quality. The next stage of the MDF project (see below) will address some of the supply chain gaps with a special focus on the finances of fish retailers.

**Savings culture:** Contrary to the findings that fishers do not save, the project observed that women in the coastal communities have a strong savings culture through table banking groups, VSLAs, and merry-go-round. As next step, it may be useful to explore how the savings culture among women can be leveraged, and to identify their capacity building needs.

**Promoting sustainable fishing practices through cost-benefit analysis:** Some SSF engage in unsustainable fishing practices. Modern technology is readily available from local manufacturers, such as Captain Andy's, to transform their fishing operations into more sustainable businesses. A cost-benefit analysis might demonstrate why the uptake of technological innovations has remained low among many SSF, and give guidance on what measures could be cost-effective.

**Change of entrepreneurial mindset:** There is a need for a paradigm shift, from artisanal to semi-industrial fishing practices that will facilitate sustainable fishing along the Kenyan coast. Participants agreed that the starting point in building the capacity of fishers is changing their mindset. This will help them to scale up their businesses and invest in modern fishing practices.

**Adoption of digital financial services:** Kenya has a robust infrastructure that can readily support digital financial services. It is noteworthy that digital transactions have continued to operate despite the disruptions imposed by the COVID-19 pandemic. The digital services are valuable in spurring growth and in adopting digital financial services in the fisheries sector. Currently, many private sector enterprises in Kenya already engage in e-commerce and a large percentage of all e-commerce payments in the country are settled through mobile money payment platforms.

## 6. NEXT STEPS AND OUTLOOK FOR 2022

Based on the project's success to bring together key stakeholders in the sector in 2021, FAO and AFRACA decided to continue the activities in 2022. The project team agreed that the following activities will be the most important to further enhance project outcomes in 2022:

**Continue to provide a platform for stakeholders to get together:** While there was good stakeholder involvement in the project, the overall stakeholder engagement in the SSF sector along the Kenyan Coast continues to be driven by the public sector. Public sector stakeholders have good working relationships among themselves. However, the public domain remains disconnected from private sector players (in this case FSPs and insurance service providers). The weak public - private sector relationships may also be linked to the low investment in the sector. The establishment of CAFI-SFF Kenya Chapter was a major milestone in the project and well accepted by all stakeholders. The project should maintain this momentum and will build on the gains of this new network by continuing its support in the next phase.

**Further develop capacity building material:** AFRACA managed to increase its knowledge in SSF financing. Another key outcome under this activity was the development of training materials. The trainings were also used to identify entry points for investment by FSPs. Based on the feedback obtained from the first training with a few selected FSPs, there is scope to continue enhancing the training materials into a more robust training curriculum that can be cascaded to the wider network of AFRACA's membership. Some key areas for further improvement and updating include but are not limited to the following:

- Expanding the modules for financial modelling by incorporating more case studies to strengthen the business cases. For example, incorporating more case studies on mariculture and an additional case study from another targeted project location about a semi-industrial fisher.
- Incorporating a credit assessment tool to be used as a learning tool or one that can actually be adapted by financial institutions to aid their credit assessment processes.

It is also recommended that the enhanced training curriculum is further tested through another in-person or virtual training activity, preferably with a diverse set of participants from another geographical setting.

**Analysis of value chain actors:** Another key outcome of the MDF project was the finding that the market infrastructure and interconnectivity among participants in the seafood value chain is poor. One potential intervention moving forward is the need to grow local fish market systems to provide consumers with better products and create a more efficient pricing mechanism. The activities in 2022 will look more closely into local women retailers, also known as Mama Karangas in Swahili, and their financial needs. FSPs hold the view that there is a lot of labour invested by these women retailers, with limited returns. There are likely going to be several capacity building interventions to improve their trade. FSPs view Mama Karangas as potential borrowers, hence an entry point for micro finance provision along the SSF.

## REFERENCES

**Coast Development Authority (CDA).** 2022. *CDA Projects* [Cited 19 April 2022]

<http://cda.go.ke/html/projects.html>

**FAO.** 2015. *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication*. Rome. [www.fao.org/voluntary-guidelines-small-scale-fisheries/en/](http://www.fao.org/voluntary-guidelines-small-scale-fisheries/en/)

**FAO.** 2022. *Financing fisheries in Africa: Financial services provision to small-scale fisheries*. FAO/AFRACA. Available at: [www.fao.org/publications/card/en/c/CB9021EN/](http://www.fao.org/publications/card/en/c/CB9021EN/)

**Kenya Marine and Fisheries Research Institute (KMFRI).** 2021. *Kenya Launches a coral reef fish project (Funded by Japan/FAO) to improve food security, livelihoods and maritime safety through increased resilience of coastal fishing communities* [Cited 26 February 2021].

[www.kmfri.co.ke/index.php/careers/240-kenya-launches-a-coral-reef-fish-project-funded-by-japan-fao-to-improve-food-security-livelihoods-and-maritime-safety-through-increased-resilience-of-coastal-fishing-communities](http://www.kmfri.co.ke/index.php/careers/240-kenya-launches-a-coral-reef-fish-project-funded-by-japan-fao-to-improve-food-security-livelihoods-and-maritime-safety-through-increased-resilience-of-coastal-fishing-communities)

**STAR,** 2021. *So much fishing, so little fortune: What the industry should change*. [Cited 30 September 2021]. [www.the-star.co.ke/news/big-read/2021-08-26-so-much-fishing-so-little-fortune-what-the-industry-should-change/](http://www.the-star.co.ke/news/big-read/2021-08-26-so-much-fishing-so-little-fortune-what-the-industry-should-change/)



## ANNEX 1

### DETAILED SUMMARY OF SURVEY RESULTS

#### Methodology

For a description of the methodology of the three surveys (financial service providers, fisherfolk organizations, individual fisherfolk), kindly refer to the main text.

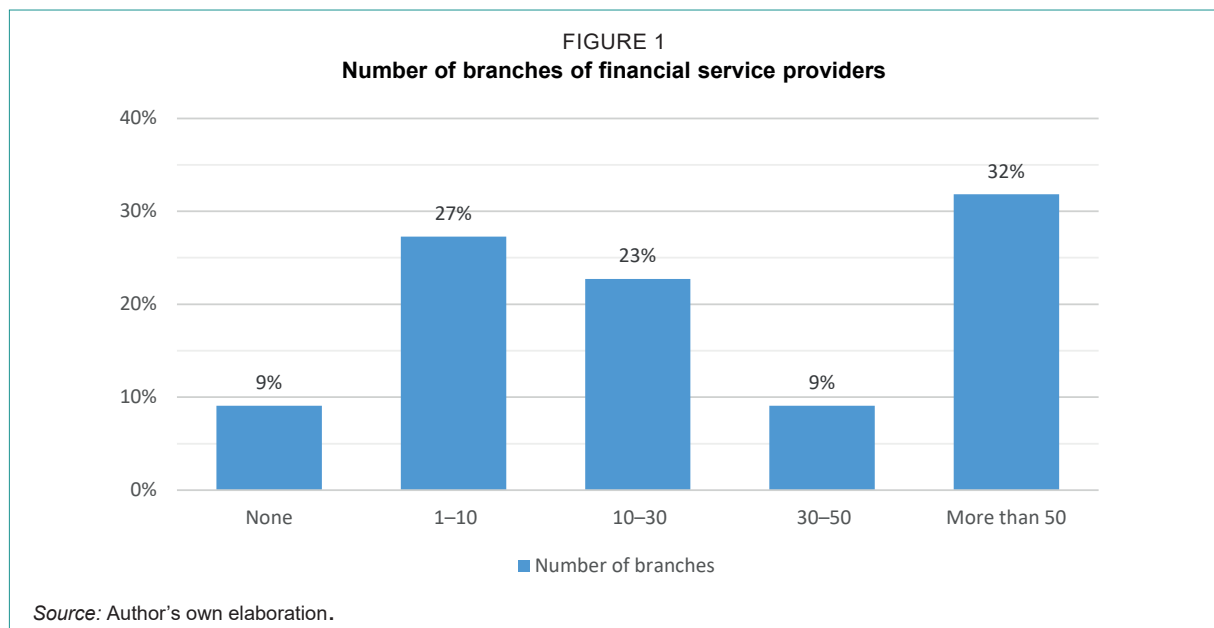
#### Key survey findings for financial service providers (FSPs)

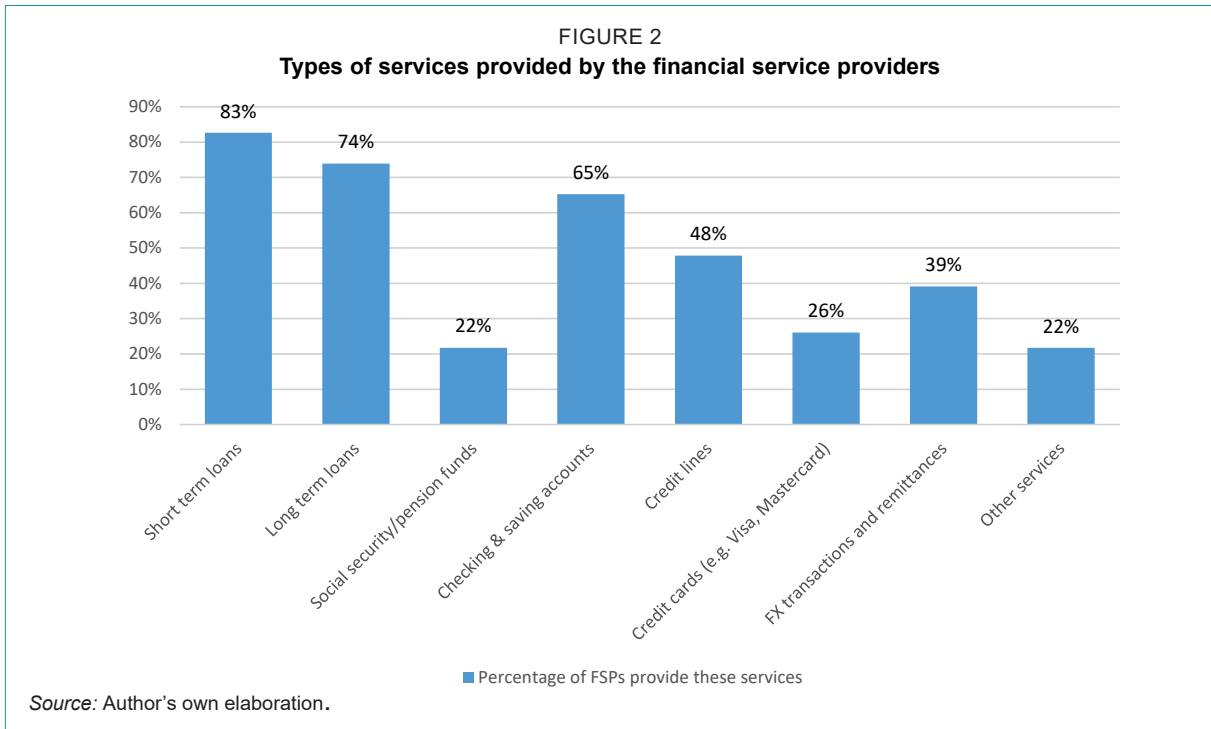
AFRACA consulted 23 financial service providers including commercial banks, microfinance banks, and savings and credit cooperatives (SACCOs). The survey revealed that there is adequate coverage by FSPs along the Kenyan coast. Most of the FSPs operate a widespread network of branches (see Figure 1). Some FSPs maintain several branches at the coast that could ably serve the fishers in terms of geography and availability of physical infrastructure. Reaching the small-scale fishers (SSF) per se is therefore not a problem.

FSPs offer a wide range of services (see Figure 2). FSPs report that the product with the highest consumer appetite is short-term loans and there are only limited challenges in repayment for short-term financial services. FSPs theoretically also offer long-term loans. However, the actual uptake of such long-term financing (particularly among SSF) is scant. Other services widely available include checking and savings services. Interestingly, a number of the institutions provide credit lines to their clients which offer a high degree of flexibility to the customer. Some of the service providers do foreign exchange operations such as accepting remittances.

Despite the positive findings on the availability of financial services in general, uptake by SSF is low. Less than 1 percent of loans go to SSF. There are no specialized products for the sector but rather general agriculture products and overall provision of credit programmes by the FSPs to the fisheries sector is at best, half-hearted.

Digital financial services are surprisingly widespread and offered by most of the FSPs. In particular, the high availability of online banking (about 60 percent of FSPs offer online banking) and online loan applications (offered by about 50 percent of FSPs) speak to a well-developed set of digital services on

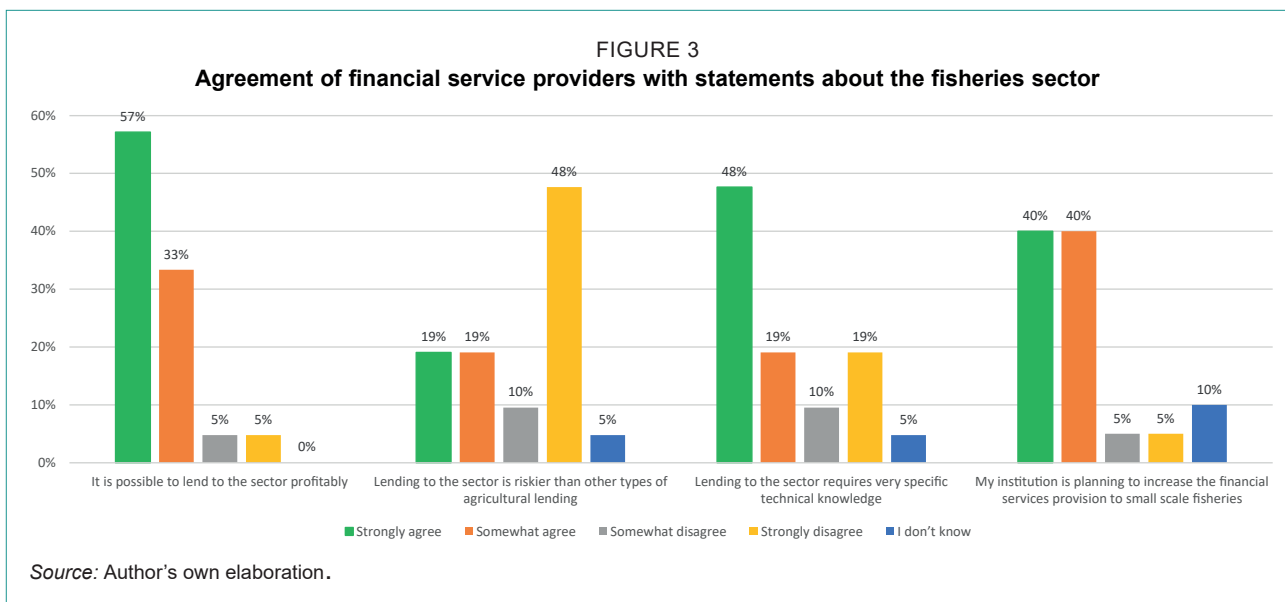




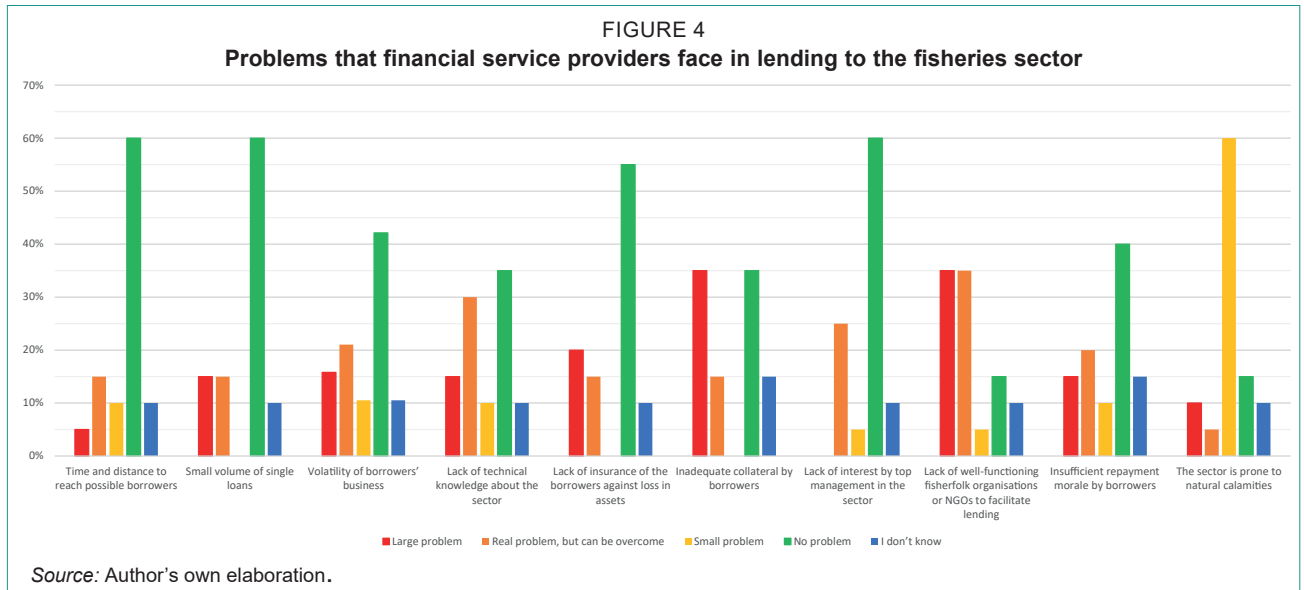
the part of the FSPs. Thirty-five percent use online trainings for clients, which is a channel that might be exploited to reach SSF as well.

The survey asked FSPs about their perception of the fisheries sector. Most of the financial service providers confirmed the possibility of lending to the sector profitably and disagreed with the thought that lending to the sector was riskier than other types of agricultural lending. To this effect they are willing to increase financial services provision to SSF if prospects increase (see Figure 3). They reiterated the need for specialized technical knowledge to properly understand the sector. Again, this positive assessment of the fisheries sector in general is somewhat contrary to the actual lending to SSF. This might be explained by the fact that the FSPs do not object the sector per se, but rather haven't found the means to address it properly yet and do not see sufficient high-quality demand from SSF.

The top management of most of the service providers have interest in the sector. One way to push them towards lending to SSF could be through the presentation of positive business cases from the SSF sector.







Asking FSPs about the problems they face when lending to SSF reveals some interesting patterns and can guide further attempts to develop the sector (see Figure 4). The findings confirm the positive outreach by FSPs. Time and distance to the SSF are reportedly no major problems and can be overcome. The size of small loans also isn't seen as a big problem as FSPs have facilities that can accommodate small loans. The fact that fishing is prone to natural calamities is noted by FSPs but only seen as a small problem.

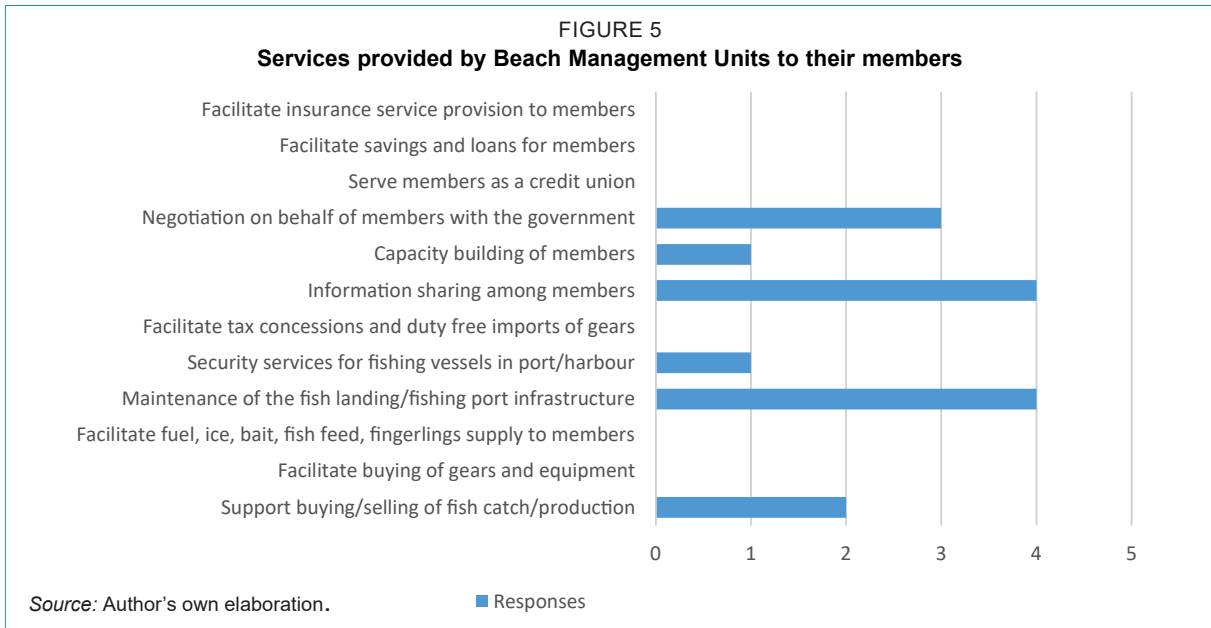
The most pressing issue that FSPs see when considering lending to SSF is inadequate collateral and - most of all - a lack of well-functioning fisherfolk organizations or NGOs to facilitate (and probably secure) the lending to SSF. Seemingly, without such institutions in the middle, many FSPs are unwilling to lend to SSF directly. FSPs seem to regard facilitating institutions as a more suitable way of lending to SSF than providing individual loans. The lack of insurance, while being regarded as problematic by some, is rated as no problem by more than 50 percent of the respondents. Regarding collateral, further probing into the results reveals – not surprisingly - that microfinance service providers are less stringent in their collateral requirements than commercial banks.

Only 25 percent of the FSPs surveyed have received governmental support to enhance provision of services to SSF. The FSPs generally use their own funds. Most FSPs are willing to dedicate some time to work with other stakeholders including government agencies, fisherfolk organisations, NGOs and international organisations.

The respondents to the survey indicated a need for capacity building in areas suggested by the survey. Technical training on SSF value chains and market demand studies were mentioned by most FSPs, but further assessment of the training needs is necessary. FSPs reported that networking with fisherfolk organizations, government entities or specialized training institutes is a high priority for them. Financial support for their lending operations was also mentioned by a number of FSPs.

### Key survey findings for fisherfolk organizations

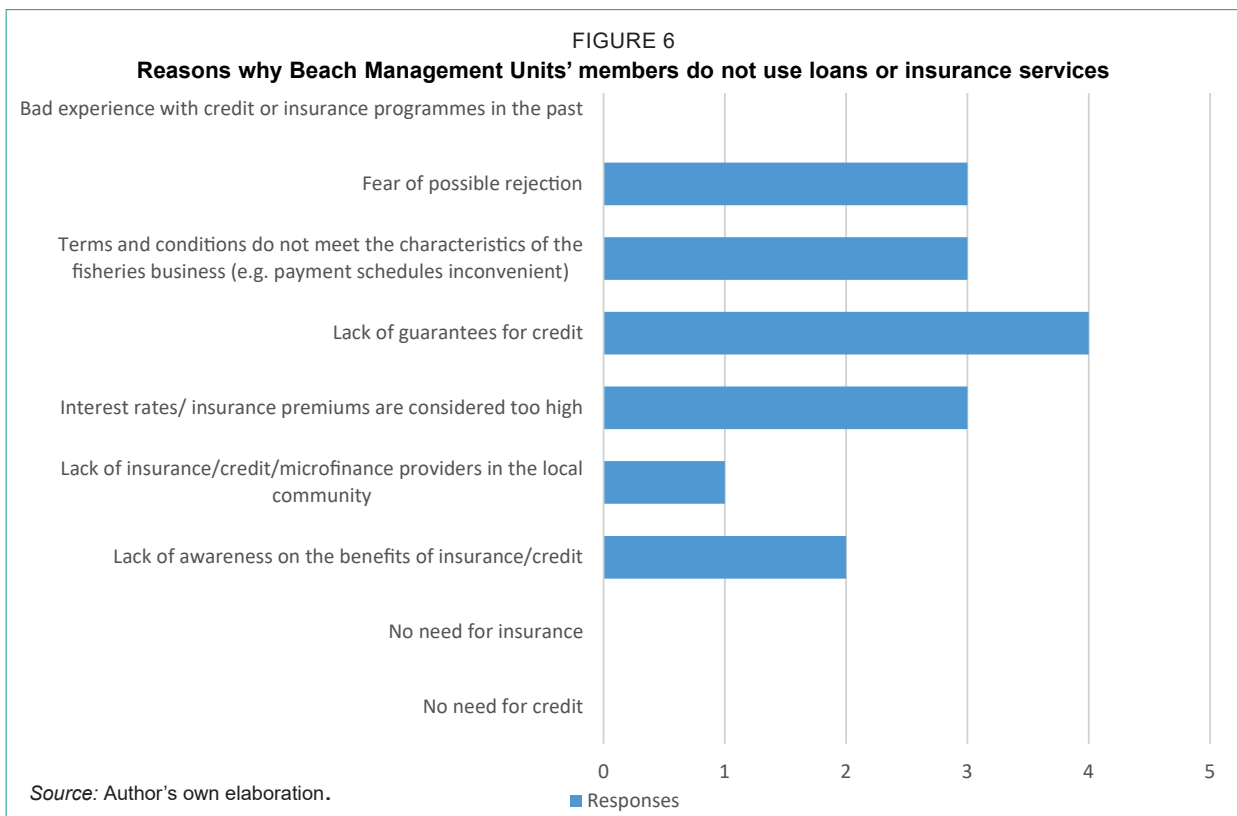
The questionnaire was administered to 4 fisherfolk organisations known as Beach Management Units (BMUs). The BMUs are registered by the State Department for Fisheries, Aquaculture and the Blue Economy under the *Fisheries Management and Development Act of 2016*. The act creates the BMUs under section 38 with a distinct mandate of managing the fisheries resources in collaboration with the government. During the survey, the BMUs had 155, 300, 468 and 779 members respectively. About 20 percent of the members were women. This membership is mainly drawn from skippers and captains of fishing vessels, crew members and fish traders. Others are vessel owners and boat builders. The boats used by the members of the BMUs are mainly canoes.



BMUs provide a range of services to their members which include information sharing among members, maintenance of the fish landing sites and negotiations on behalf of the members with the government. To some extent they also support their members in buying and selling of fish. (see Figure 5).

The main source of funds to the BMUs are the levies that they deduct from the catch sold through them. The government has also provided in-kind support in the past. Such support included gears, fish coolers, life jackets and scuba diving kits. Because of their restricted mandate, BMUs cannot access finance from the FSPs; hence have never done so.

BMUs state that their members find it difficult to deal with FSPs due to a variety of reasons such as high interest rates, stringent terms and conditions, lack of guarantees and fear of possible default (see Figure 6).



The BMUs perception of FSPs is that they prefer to work with other agricultural value chains, but not the fisheries sector. This is however, contrary to the FSPs narrative and merits further investigation.

BMUs are also aware that their members access short-term loans either from friends, self-help groups, including Village Savings and Loan Associations (VSLAs), Accumulating Savings and Credit Associations (ASCAs), as well as from family members. Interestingly, BMUS state that members also borrow from each other, for example between crew members and boat owners. On most occasions repayments are done in kind, with fish captured. Insurance penetration is almost zero with only two tourism vessels insured at the Bamburi BMU in Mombasa County.

Technical support scored highly in capacity building demands from BMUs. This included knowledge on fish value chains, fishing and aquaculture technologies in general, and operation and innovations. Another area of priority was cooperation and networking skills with fisheries administration and local government agencies.

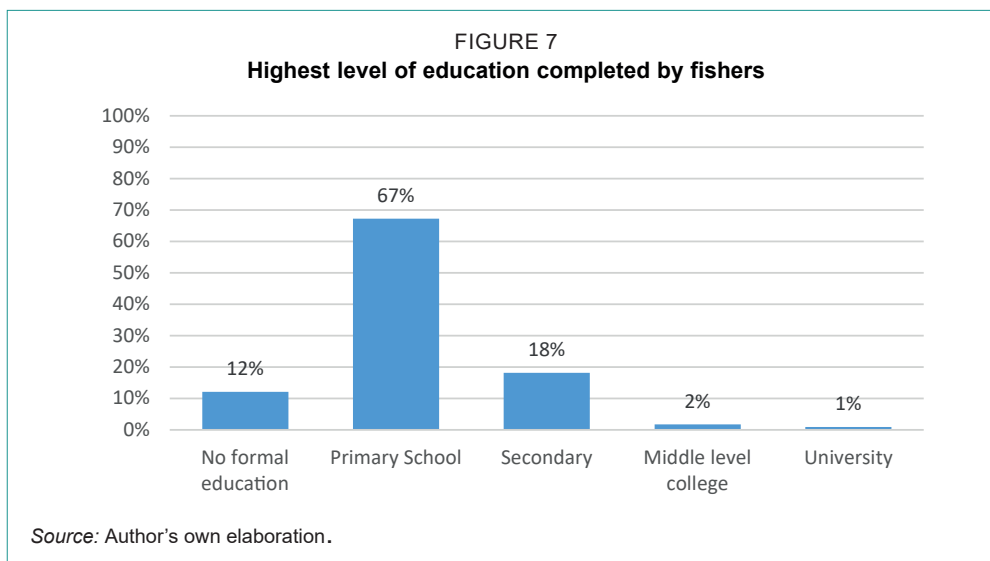
### Key survey findings for individual fisherfolk

The survey targeted 118 individual fishers and seafood value chain actors in the three survey counties. In the sample, 39 percent of the respondents were female and 61 percent male. Most of the fisher folk in the survey are engaged in fish capture activities (46 percent) while another significant group (39 percent) are also or only involved in trading activities or work as fishmongers. The surveyed women fall largely under this category of fishmongers. Processors (9 percent) constitute a small group, but are known to play a key role in value addition and accessing other markets.

Most fishers are between 45 and 55 years of age and the second most important age bracket are fishers of 26 to 35 years old. Only 3 percent of respondents are younger than 26, meaning that the surveyed SSF are far above the average age of about 20 years in Kenya. The majority of the fishers (67 percent) have completed primary school followed by secondary school at 21 percent. Eleven percent of the respondents reported to have completed no formal education (see Figure 7).

The majority of SSF interviews do fishing as an income generating activity. About 70 percent of those surveyed sell their catch to earn income. Less than 5 percent only fish for their own consumption.

Some corroborating research confirms that the above is in line with characteristic features of the Kenyan coastal SSF. In addition, some of the stakeholders consulted, described an SSF as one who operates a small boat (usually a canoe) and does not exceed a catch of 10 kg per trip.



Most SSF stated that their annual incomes are insufficient to take care of their households’ needs. The annual average income of most fisherfolk commonly ranged between USD 300 and USD 600 (46 percent), followed by USD 600 to 900 (27 percent) with the rest earning more. The average income reported by the respondents is far below the national average in Kenya of about USD 7 500.<sup>1</sup> Accordingly, reported savings are very low with about 80 percent of the SSF saving less than USD 420 in a year.

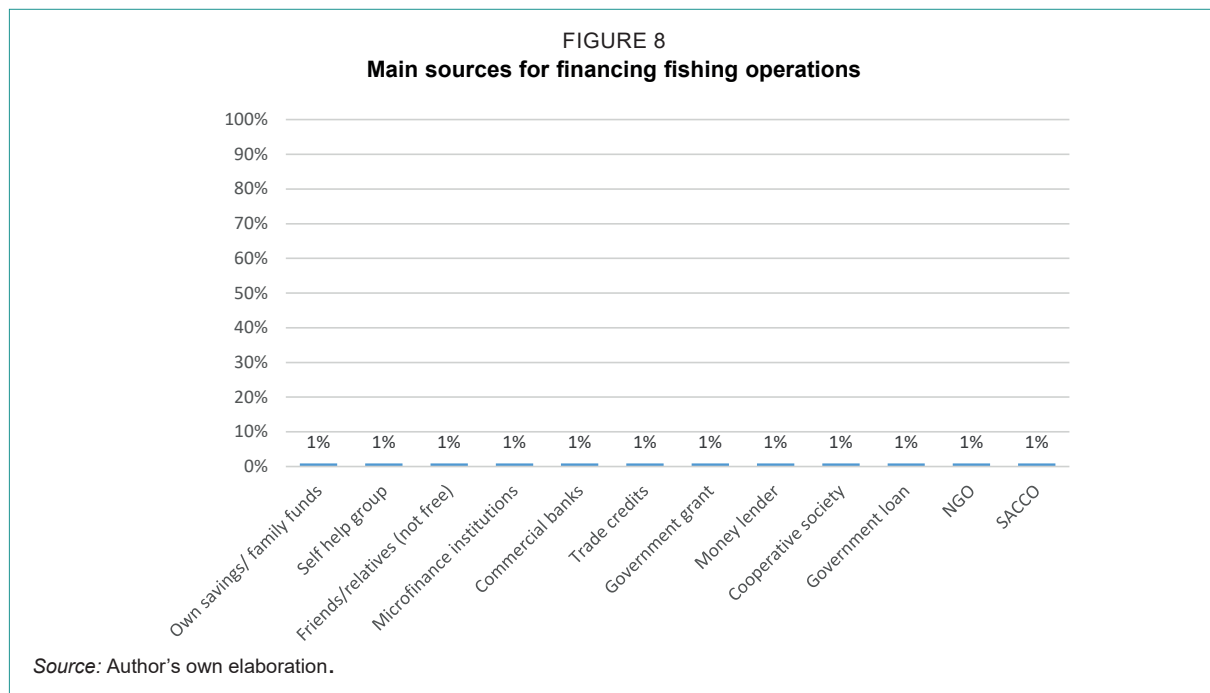
It must be noted, however, that some individual fishers had reservations in providing information on their actual incomes and have likely understated their income in the survey to some extent. Many stakeholders confirmed this suspicion. The fact that SSF tend to understate their income might have an effect on how they are regarded by FSPs.

Less than 10 percent of the SSF claimed to have insurance for their fishing vessel, engine or other equipment. More than 50 percent reported not to own any equipment at all. While this includes many of the fishmongers it also shows that much of the equipment is often in multiple ownership or borrowed, further complicating the use of such assets for the purpose of financing.

Accordingly, the main sources of financing their fishing operations are from their own savings, family funds and self-help groups, while most of the SSF are not accessing loans from financial service providers (see Figure 8).

Most SSF are using digital services. Mobile money services are used by 76 percent and 30 percent use online banking (which is all the more surprising given the low average income in the sample). Kenya has a high mobile penetration in recent years and this is upheld by the survey findings. However, this has yet to be translated into improving the fishing business and possibilities should be further explored. For example, the SSF do not use any kind of online support to trade their fish or participate in online trainings.

The training needs prioritised by the SSF are marketing and selling of fish, followed by training in personal finances (also on how to get a loan), while training in fishing technology ranks only third.



<sup>1</sup> This was calculated using the 1 July 2021 exchange rate of 1 USD = 108 KES (Source: [www.xe.com/currencycharts](http://www.xe.com/currencycharts)) Income data from: [https://www.ceicdata.com/en/kenya/average-wage-earnings-by-sector-and-industry-international-standard-of-industrial-classification-rev-4/average-wage-earnings\\_](https://www.ceicdata.com/en/kenya/average-wage-earnings-by-sector-and-industry-international-standard-of-industrial-classification-rev-4/average-wage-earnings_)

## ANNEX 2

### FISHERIES TECHNOLOGIES AND INNOVATIONS FOR INVESTMENT AND FINANCING

#### 1. ASSESSMENT INTRODUCTION AND BASIC INFORMATION ABOUT MARINE CAPTURE FISHERIES IN KENYA

##### 1.1 Objectives of this assessment

The objectives of this assessment of fisheries innovations for investment and financing were the following:

- Provide an overview of the current situation in the marine capture fisheries sector in terms of the social, economic and environmental sustainability of currently used fishing technologies and operations.
- Identify options for innovation and improvements in fishing vessels, on-board equipment and gears that will contribute to social, economic and environmental returns of the marine capture fisheries sector.

The information collected and analysed in this assessment was produced to support the design and implementation of formal micro-finance and credit programmes for fisheries in Kenya. The information contributes to financial service providers' knowledge about fisheries, their assessment of sustainable fishing operations, and what innovations to support financially.

##### 1.2 Methodology

The information presented was collected through desk study and field visits in the period March–July 2021. The methodology applied was largely similar as was used by FAO in the review of the techno-economic performance of the main global fishing fleets (Van Anrooy *et al.*, 2021). The preliminary findings were discussed during a stakeholders workshop on “financing innovations for sustainable fisheries with the private sector in Kenya” held in Mombasa on 11–12 August 2021 (see Annex 3).

The economic and financial data collected have been incorporated in training courses of AFRACA for financial service providers in Kenya, in support of cash flow analysis, loan application analysis and risk assessment processes.

##### 1.3 Historical context: Capture fisheries trend in Kenya

Kenyan fisheries takes place at several freshwaters (lakes, rivers and dams) and in the marine environment (The Indian Ocean). Kenya's fisheries sector is prominently a subsistence fisheries and contributed approximately 0.5 percent (USD 419 million) to the country's gross domestic product (GDP) in 2018 (KNBS, 2021). Kenya's total annual fish production is estimated at around 140 000 to 150 000 tonnes (FAO, 2020). Inland fish capture contributed 71 percent to Kenya's total fish production, while aquaculture contributed 12 percent, and marine catch contributed 17 percent to the total production.

The principal fishery is that of Lake Victoria, for Nile perch, tilapia, and fresh water sardine (*Rastrineobola argentea*). Lake Victoria accounts for approximately 65 to 72 percent of the total annual fish production of Kenya. Kenya's share of Lake Victoria is 4 300 km<sup>2</sup>. Lake Turkana is the country's largest inland freshwater body (7 400 km<sup>2</sup>) and produces about 4 000 tonnes of fish annually. Other freshwater bodies of commercial fisheries importance include the lakes Naivasha, Baringo, and Jipe and the Tana River dams. The country's freshwater production comprises about 94 percent of the total annual production. The country's marine capture fisheries potential is estimated at 150 000 tonnes.

The landings from marine fisheries (about 24 000 tonnes) are low despite the fact that Kenya has a 640 km coastline with 200 nautical miles of the exclusive economic zone (EEZ). The main reasons for the limited marine fish landings are the relatively short continental shelf area and the absence of an industrial fishing fleet that lands fish in Kenya.

The main fishery products harvested from the marine waters are demersal species (e.g. snappers), pelagics (e.g. tuna and tuna-like species), crustaceans (e.g. shrimps and lobsters), mollusks, octopus and squids. Limited artisanal fishing activity and fleets from distant water fishing nations (DWFNs) characterize Kenya's marine fishery. The marine fishery is dominated by foreign fishing vessels that target skipjack, yellowfin and bigeye tuna. These DWFN include the United States of America, China, Italy and a number of other European countries (Ruwa *et al.*, 2003; Kimani *et al.*, 2009; Easton *et al.*, 2021). This DWFNs fleets comprise purse seiners and longliners, fishing under access arrangements with the Kenyan Government, with no obligation to land catches in the country. This arrangement limits the country's benefits from its EEZ fishery and reduce Kenya's fishery industry development prospects associated with transshipment, landings for value addition, food security contribution, and even by-catch products use and trade.

In the 1990s sustainable fisheries management, development, conservation and utilization mandates in Kenya were with government departments. In 2010 a policy shift took place from a government centered approach to a stakeholders (co-management) based approach. This new approach would ensure that fishers and other stakeholders could be involved in fisheries management and decision-making. In case of fisheries resources depletion, the stakeholders (e.g. fishers, fish traders, and consumers) will be the biggest losers while the government will lose in revenue and foreign exchange earnings. In this new approach, management problems can be solved individually and cooperatively by resource users, thus ensuring that marine resources are managed sustainably and increasing their contribution to food security and community livelihoods.

#### **1.4 Fisheries innovations for investment and financing in Kenya**

Financing fisheries innovations has similar traits to the classic investment turnaround: the upfront costs of transition are offset by the profits that are generated through more efficient and productive fisheries with higher harvests and lower operational costs. In other words, there is a real return on investment. The state of fish trade offers a strong case for both the need for, and potential returns from, a transition to sustainable fisheries.

With regards to social economic returns, FAO 2020 reports that some 59 million people around the world find a source of income and livelihood in primary production in fisheries and aquaculture. Demand for seafood continues to grow, while supply has been constrained by stable catches and insufficient increase in aquaculture production. This has led to a substantial increase in seafood prices in Kenya since the early 2000s. Investments that increase fisheries production and sustainability of resources are both necessary and potentially profitable.

Fortunately, various solutions and tools exist to increase environmental sustainability and economic feasibility of fisheries in Kenya. However, in this transition towards sustainability, there are some barriers that hinder the use of capital to drive the transition in small-scale fisheries (SSF). These include the inability of fishers to present a feasible investment proposition; the lack of formal organizations of fishers that are able to receive investment and provide payback mechanisms; and the limited ability of

TABLE 1

**Summary of constraints that investors and fishers face or assume and that reduce the credit supply to small-scale fishers**

No	Financial constraints	Fisheries constraints
1	Need to fully understand SSF fishing operations.	SSF argue that there are no specific credit/micro-finance products that suit their needs. They need tailor made products from financial institutions.
2	Need SSF to provide catch and sales records, maintain records, and provide this information as evidence of their operations.	SSF need the Financial service providers (FSPs) to bring their services closer to them; opening branches near landing beaches or provide services to their beach management units (BMUs).
3	Need to know SSF current organizational structures, including how BMUs operate.	Require training in record keeping and savings.
4	Need SSF to do a risk assessment and to purchase insurance to mitigate risks	Require capacity building for safety at sea, handling of fishing vessels and gears, and navigation.
5	Need guarantees/collateral for loans	Require upgrading their vessels and gears.

Source: Author's own elaboration.

project developers and investors to identify, mitigate and manage or predict risks associated with SSF (Table 1). To date, few fisheries projects have created investment propositions in Kenya, with good returns on investment and that highlight the associated risks

## 2. CHARACTERISTICS OF THE MAIN FISHING FLEETS OPERATING IN KENYA

The Government of Kenya estimates that the marine capture fisheries production landed in Kenya increased by 4 percent over the period 2014–2018 (Table 2). At the same time the estimated number of commercial fishing vessels (licensed to DWFN) increased from 4 in 2014, 15 to 20 in 2020/2021, a change of 400 percent. The Department of Fisheries indicated that in 2021 the government licensed 16 DWFN vessels to operate in its EEZ; three longliners, six purse seiners, two trap (basket or pot) fishing vessels and 5 trawlers (DoF, 2021).

In Kenya, marine capture fisheries include small-scale, semi-industrial, industrial, aquarium and recreational fisheries. The catches are landed at an estimated 197 landing sites along the coast. The limited landings were associated with the use of rudimentary fishing technologies within the heavily fished near shore areas in the 1980s (Muthiga and McClanahan, 1987), and since then not much seems to have changed. Approximately 80 percent of the recorded fish production is landed by SSF. Some 20 percent is landed by industrial and semi-industrial fishing vessels, mainly from DWFNs, which are not obligated to report their catches in Kenya.

There are eight economically most important small-scale and semi-industrial fishing fleets in terms of number of fishing vessels. These include: longliners, gillnetters, handliners, basket trappers, and fence trappers. The illegal ones included monofilament gillnetters, beach seines and spear guns. Based on the

TABLE 2

**Total marine fish landed over the period 2014–2018 (tonnes)**

S/No	Marine sources	2014	2015	2016	2017	2018
1	Marine fin fish	20 870	19 742	21 190	20 601	21 320
2	Crustaceans	713	621	772	702	750
3	Molluscs	1 703	1 763	2 203	1 983	2 150
<b>Total</b>		<b>23 286</b>	<b>22 126</b>	<b>24 165</b>	<b>23 286</b>	<b>24 220</b>

Source: Kenya Economic Survey 2019 (KNBS).

TABLE 3  
Overview of the main marine fishing fleets in 2016

Fishing fleets Listed by gear name	Number of vessels counted during the surveys	Scale
Gillnetters (Multifilament)	4 012	Artisanal/commercial
Gillnetters (Monofilament - illegal)	3 014	Artisanal
Handliners	4 924	Artisanal
Beach seine vessels	146	Artisanal
Longliners	7 644	Artisanal
Spear gun vessels	742	Commercial/artisanal
Basket trappers	3 712	Artisanal
Fence trappers	136	Artisanal
Harpoon vessels	416	Artisanal

Source: Department of Fisheries: Marine Artisanal Fisheries Frame Survey 2014 Report and 2016 Kenya Marine Frame Survey data.

2016 Kenya Marine Frame Survey data, the long liners, handliners and gillnetters were the largest fleet segments in terms of number of fishing vessels (Table 3).

Most of the fishing fleets are small-scale vessels that operate in the territorial waters. The main activities of the fleets take place in FAO Fishing Area 51 (Indian Ocean). The main species targeted by each fleet are listed in Table 4 and the main species commonly caught by each fleet are listed in Table 5. In terms of commercial value generation, Lobsters, Octopus, Scombroids (including little mackerels/ Kingfish/bonitos/tuna and tuna-like, etc.), Rabbitfish, snappers, parrotfish, and ornamental fish are the main target by these fleets.

Table 5 shows that the landings of small and medium pelagic species, like sardines and scombroids, have been increasing in recent years, while the landings of octopus, snappers and parrotfish have been declining.

TABLE 4  
Main species targeted by fishing fleet<sup>1</sup>

Fleets/Species targeted	1	2	3	4	5
Gillnetters (multifilament)	Sharks	Tuna	Snappers	Lobsters	Mulletts
Gillnetters (monofilament)	Mulletts	Rabbitfish	Scavengers	Prawns	Marine Catfish
Handliners	Scavengers	Snappers	Tuna	Sailfish	Others (mixed)
Beach seine vessels	Scavengers	Parrotfish	Rabbitfish	Others (mixed)	
Longliners	Sharks	Snappers	Tuna	Scavengers	Sailfish

Source: Author's own elaboration.

TABLE 5  
Total annual seafood landings of the 10 most caught species (tonnes)

Species (common name)	Taxa	2016	2017	2018	2019	2020
Lobsters	<i>Palinuridae</i>	243	300	424	347	543
Octopus	<i>Octopodidae</i>	1 022	1 469	1 430	939	1 034
Scombrids	<i>Scombridae</i>	895	2 077	1 894	2 737	3 423
Rabbitfish	<i>Siganidae</i>	1 878	1 985	2 006	1 859	2 322
Snappers	<i>Lethrinidae</i>	1 242	1 912	1 959	1 849	1 653
Parrotfish	<i>Scaridae</i>	2 243	1 588	1 770	1 483	1 226
Cavalla jacks	<i>Carangidae</i>	675	899	943	1 553	1 433
Barracudas	<i>Sphyraenidae</i>	234	729	610	1 187	988
Sardines	<i>Clupeidae</i>	423	543	634	2 015	1 244
Blackskin/ grunters	<i>Haemulidae</i>	875	852	1 306	1 013	1 213

Source: Department of Fisheries, Kenya.

<sup>1</sup> The species targeted are ranked from 1 (most important) to 5 (less important).



TABLE 6  
Main species discarded at sea by the semi-industrial fleets<sup>2</sup>

Fleets/Species discarded at sea	1	2	3	4	5
Prawn trawlers	Sea catfish ( <i>Galeichthys feliceps</i> )	Indian Pellona ( <i>Pellona ditchela</i> )	Bearded croaker ( <i>Johnius amblycephalus</i> )	Common ponyfish ( <i>Leiognathus equulus</i> )	Tigertooth croaker ( <i>Otolithes ruber</i> )
Longliners	Hammer head sharks	Silky sharks	Longfin mako sharks	Tiger sharks	Rays (Mobulids and Pelagic rays)

Source: Author's own elaboration.

While the artisanal fishing fleets generally do not discard species caught, the industrial fleet discards various fish species (Table 6). There are various reason why fish and other marine organisms caught in their nets are discarded.

Main reasons for discarding these species being the following:

- Locally non-edible species e.g. some species of puffer-fish;
- Protected species (e.g. sea turtles);
- Not for sale catch (either due to minimum legal sizes or low quality products);
- Catfish discards (below minimum legal size or of low commercial value).

Kenya's marine waters can be divided into three zones based on how far fishing vessels travel to fish. The first zone extends five nautical miles from the coastline and fishing in this zone is for SSF and sport fishers. SSF however may venture further out into the sea but are restricted by their size of boats. The second zone is between five and 12 nautical miles and is together with the first zone recognized internationally as the territorial waters. Limited trawling takes place here but in Kenya it is the area where most prawn trawlers operate. The third zone is the area between 12 and 200 nautical miles offshore and is the Exclusive Economic Zone (EEZ); throughout this report, this area will be referred to as "deep waters".

Small-scale fishers in Kenya use different types of vessels and have local names for their vessels as described in Table 7.

TABLE 7  
Types of marine fishing vessels used in artisanal and semi-industrial fleet segments (local or Swahili names are used)

S/No	Fishing Vessel type	Description
1	Dugout Canoe	This is a craft curved out of a log of wood / tree trunk. It can either be pointed or not at both sides. It has no joints or planks.
2	Hori	Flat bottomed fishing boat pointed at both ends and used mostly in the shallow waters. It is propelled by sail/paddles. It is strengthened by ribs (mataruma) on its sides and the floor.
3	Ngalawa	A craft pointed on both ends and with outriggers on both sides (mirengo). It is propelled by a sail.
4	Dau	A flat bottomed fishing craft with or without ribs at the bottom and pointed at one end.
5	Mashua/Dhow/Jahazi	A craft pointed on one end with a V-shaped bottom. It is propelled by sail or engine. The Jahazi is a bigger than Mashua and normally more than 12 metres (LOA).
6	Mtori	A craft with a V- shaped bottom pointed at both ends with ribs. It is propelled by an outboard motor/ or sail
7	Surf board	A board normally used for surfing, but used instead for fishing
8	Fishing Raft	A single or jointed fabricated floating platform made from locally available material including styrofoam, wood, bamboo, etc.

Source: Author's own elaboration.

<sup>2</sup> The species discarded are ranked from 1 (most frequent) to 5 (less frequent).

TABLE 8  
**Characteristics of the main types of fishing vessels, in the three counties (Kilifi, Kwale and Mombasa)**

Types of fishing vessels	Average age of the vessel hull (years)	Percentage of total number of vessels	Average hull length (m)	Average size of crew	Propulsion
Dugout canoes	5–10	48	5	4	paddle/ sail
Hori	0–5	10	7	4	paddle/ sail
Ngalawa	0–5	7	6	4	sail
Dau	10–15	10	6	4	sail
Dhow/Mashua/Jahazi	10–15	10	7–12	5–20	out board motor
Mitori	10–15	7	7	4	out board motor
Surf boards	10–15	2	4	2	sail
Fishing rafts	0–5	1	3	2	paddle
Others	5–10	5	6	4–20	Outboard motor/sail

Source: Author's own elaboration.

Table 8 provides an overview of the age structure of the vessels in the main fishing fleets identified.

### 3. TECHNOLOGICAL AND OPERATIONAL CHARACTERISTICS

Technical and economic information was collected from a total of 21 fishing vessels in three coastal counties of Kenya (6 vessels in Kilifi, 11 in Kwale and 4 in Mombasa). A common attribute of the vessels is that their hulls are of wood and they are often powered by outboard motors (Table 9). Vessel ownership is commonly by the fisher-operator. The capacity of the vessels varies by fishing vessel type and ranges from a small 30 kg to larger vessels that are able to carry 500 kg.

The 2016 frame survey estimated the total marine small-scale fishing fleet at about 3 000 fishing vessels. A total of 13 426 fishers were reported which used dugout canoes (27 percent), Mashua (12 percent), Hori (6 percent), Dau (5 percent) and Ngalawa (4 percent). More than 40 percent of fishers fished by foot.

Sail was the most used propulsion mode especially in Kwale representing 47 percent of total propulsion mode in this county. Paddles were the second propulsion mode representing 40 percent followed by outboard motors (11 percent) and poles (2 percent) respectively. Paddles were the most abundant propulsion mode in Kilifi and Mombasa counties used by 51 percent and 73 percent of vessel in these

TABLE 9  
**Characteristics of average fishing vessels in Kilifi, Kwale and Mombasa**

Characteristics	Kilifi 12 m Average (or range)	Mombasa 7 m Average (or range)	Kwale 12 m Average (or range)
Length overall (LOA) in metres	10–12 (m)	4–10 (m)	12–15 (m)
Decked/undecked	Decked 90%	Undecked 90%	Decked 90%
Material of hull	Wood	FRP (polyester)	Wood
Gross tonnage (GT)	less than 10 GT	less than 5 GT	less than 10 GT
Type of engine (outboard/inboard)	100% Outboard	100% Outboard	100% Outboard
Total power of main engine horse power	15–60 HP	15–60 HP	25–60 HP
On-board ice and catch storage facilities	Limited	None	None
Fishing gears used	Ring seine net	Crab Traps	Long line & gillnet
Deck equipment used	Winch	None	None
Crew size (persons)	10 to 20	4 to 10	12 to 20
Ownership	Fisher owned	Fisher owned	Fisher owned
Total days fishing at sea per fishing trip	1 to 3	1 to 3	1 to 3
Number of fishing trips per year	140	140	140
Fishing season (months)	September - April	September - April	September - April

Source: Author's own elaboration.

counties respectively. In Kilifi County, outboard motors were used by 26 percent of the vessels, while in Mombasa County some 20 percent of the vessels use outboard motors. Inboard engines are used by less than 3 percent of the vessels in these counties.

The 2016 frame survey also showed that only 5 percent of the operational fishing vessels had some form of fishing and navigational aids to support their fishing operations and for safety purposes. The essential navigational aids included: compass, GPS, and fish finders or combinations of the same. Mashua and Dau were the dominant crafts using the fishing aids.

About 50 percent of all the operational fishing vessels using navigational aids were equipped with GPS and 29 percent with a combination of the three GPS + fish finders+ compass. In Kilifi County only 8 percent of the operational fishing vessels used navigation equipment, in Mombasa 5 percent, and in Kwale only 3 percent.

#### 4. STOCK STATUS OF FISHERIES RESOURCES AND THE EFFECTS OF FISHERIES INNOVATION

The general status of Kenya's inshore marine and coastal fisheries resources is uncertain. This is caused by inadequate information and unavailability of stock assessments (Table 10). A few attempts, have been made to collate existing data, collect more data to fill the gaps and carry out stock assessments.

TABLE 10

The status of some key commercial species in coastal Kenya

Fishery	Taxa	Status	Remarks	References
Small scale reef finfish fisheries	<i>Siganus sutor</i> <i>Leptoscarus vaigiensis</i> <i>Lethrinus lentjan</i>	Overfished	Declining yields, Declining sizes, Declining species richness, Changes in species composition.	Samoilys <i>et al.</i> , 2016; Tuda <i>et al.</i> , 2016; Kaunda-Arara <i>et al.</i> , 2004; Hicks and Mcclanahan, 2012
Tuna and large pelagic species	<i>Katsuwonus pelamis</i> <i>Thunnus albacares</i> <i>Euthynnus affinis</i> <i>Thunnus obesus</i> <i>Xiphias gladius</i> <i>Tetrapturus audax</i>	Katsuwonis pelamis overfished. Other species within MSY	There are large variations in catches across years, stock status unknown for most species	Munga <i>et al.</i> , 2013
Shallow water prawn	<i>Penaeus indicus</i> <i>P. monodon</i> <i>P. semisulcatus</i> <i>Metapenaeus</i> <i>Monoceros</i>	Uncertain	Other environmental factors may impact on the fishery	Munga <i>et al.</i> , 2013
Shallow water lobster	<i>Panulirus ornatus</i> <i>P. longipes</i> <i>P. versicolor</i> <i>P. hormarus</i> <i>P. penicillatus</i>	Optimally exploited	Reservoir stocks may exist in deeper reefs	Mueni <i>et al.</i> , 2016
Small and medium pelagics	<i>Rastrelliger kanagurta</i> <i>Sphyrna flavicauda</i> <i>S. jello</i> <i>S. obtusata</i> <i>Hemiramphus far</i>	Overfished	Large temporal and spatial variations occur	Munga <i>et al.</i> , 2016
Mud crab	<i>Scylla serrata</i>	Optimally exploited		Fondo <i>et al.</i> , 2004
Marine aquarium	<i>Amphiprion allardi</i> <i>A. akallopisos</i> <i>Pomacanthus imperator</i> <i>P. chrysurus</i> <i>P. maculosus</i>	Overfishing of some species	Evidence of over exploitation of some species, high spatial variations influenced by Recruitment patterns	Okemwa <i>et al.</i> , 2016
Sea cucumber	<i>Holothuria scabra</i> <i>H. nobilis</i> , <i>H. fuscogilva</i>	Overfished	Needs regulation to recover	Muthiga <i>et al.</i> , 2010
Octopus	<i>Octopus cyanea</i>	Optimally exploited	More active fishing in the South Coast	Fondo, 2008

Source: Author's own elaboration.

TABLE 11

Comparison of mean CPUE between 2003/2004, 2008/2009 and 2014/2015 (mean  $\pm$  SE) among some common fishing gears at the south coast of Kenya (Gazi, Msambweni, Shimoni and Vanga)

Gear type	CPUE (Kg/fisher/trip)		
	2003/2004	2008/2009	2014/2015
Small gill nets	3.7 $\pm$ 0.5	5.2 $\pm$ 0.3	4.2 $\pm$ 0.9
Basket traps	4.4 $\pm$ 0.1	5.5 $\pm$ 0.6	4.6 $\pm$ 0.5
Hand lines	5.1 $\pm$ 0.1	4.5 $\pm$ 0.1	3.6 $\pm$ 0.4
Spear guns	6.1 $\pm$ 1.1	6.2 $\pm$ 0.7	4.0 $\pm$ 0.4
Beach seines	7.9 $\pm$ 3.7	2.6 $\pm$ 0.4	2.5 $\pm$ 0.2

Source: Unpublished data, KMFRI.

For purposes of stock assessment reporting in Kenya, the institution responsible, the Kenya Marine Fisheries Research Institute (KMFRI), usually groups the marine fishery into functional categories focusing either on fisheries target species or key commercial categories.

It is worth noting that demersal reef fishes contribute most (45 percent) to the total marine production. However, there is also a large proportion of unclassified species, which could increase the contribution of demersal finfish to total production to more than 50 percent. The other major groups found in the marine fisheries production statistics include pelagic species (35 percent), molluscs (9 percent) and crustaceans (3 percent).

Catch per Unit Effort (CPUE) is often used as an index of relative abundance, assuming that it is proportional to the size of the fish stock and that the allocation of fishing effort is random. At the south coast (Kwale County), the average catch per trip is reported to have declined 4 fold from 13.7 kg/fisher/trip in the 1980s to about 3.2 kg/fisher/day trip in the 1990s and then remained more or less stable (Samoylys *et al.*, 2016). The KMFRI data set, grouped into 5 year clusters between 2003 and 2015, provides more evidence of the declining trend (Table 11). Since 2008/2009 a decline of 1 - 2 kg/fisher/trip has occurred among the commonly used gears. Remarkably, a 70 percent decline in the beach seine catch rates is observed between 2003/2004 and 2008/2009.

The stock status of some fisheries target species is known, because stock assessments have been carried out within the last 5 years. Table 12 covers the species for which a stock assessment has been undertaken and the assessed status of the stocks. The table presents the outcomes of a review of the stock status of target species by the fisheries stakeholders in the stakeholder workshop, using a simplified scoring methodology adapted from the stock status and management scoring table of the Marine Stewardship Council (MSC) – see Appendix 1.

The stakeholder workshop expressed concern about the stock status of the following target species: tuna and tuna like species, grey mullet, black marlin and mackerel. These fisheries require species specific management plans. There is a tuna strategy and a draft tuna management plan, but the implementation of these need to be enforced.

Marine megafauna, often protected species, such as sea turtles, dugongs, dolphins, sharks and rays are sometimes captured as bycatch, particularly in gillnets, handlines and longlines. There is a difference in the risk of the different gears to these vulnerable megafauna.

In some fisheries there is frequent bycatch of Endangered, Threatened or Protected (ETP) species. In Table 13 a fisheries stakeholder assessment is provided of the bycatch of ETP species, habitat effects of the fisheries, and the fisheries status in terms of abandoned, lost and otherwise discarded fishing gears (ALDFG).

TABLE 12  
**Stock status and management rating of fisheries target species<sup>3</sup>**

Species name	Scoring category (stock status)	Scoring category (management)	Rationale
Flathead grey mullet	20–39	60–9	The fishing gears used are not clearly defined in the Act and the gazetted fisheries regulations
Yellow fin Tuna	20–39	60–79	The tuna development plan does not define catch sizes
Big eye tuna	20–39	60–79	The tuna development plan does not define catch sizes
Blue marlin	60–79	40–59	The tuna development plan does not define catch sizes
Red snapper	60–79	40–59	The fishing gears used are not clearly define in the Act and the gazetted fisheries regulations
Indian Mackerel	20–39	20–39	The fishing gears used are not clearly define in the Act and the gazetted fisheries regulations
Sword fish	60–79	40–59	The fishing gears used are not clearly define in the Act and the gazetted fisheries regulations
Black marlin	60–79	40–59	The fishing gears used are not clearly define in the Act and the gazetted fisheries regulations
Shrimp	80+	80+	The Prawn Management plan describes type of fishing and specifies type of gears, TAC and closed seasons

Source: Author's own elaboration.

TABLE 13  
**Bycatch of ETP species, habitat effects and ALDFG issues of specific fishing fleets**

Fishing fleet	Bycatch of the following ETP species	Status of the ETP species in the IUCN Red List	Risk of ETP bycatch <sup>1</sup>	Habitat effects	Habitat effect level	Risk of ALDFG
Shrimp trawlers	Sea turtles, Sharks	Critically endangered and Endangered	L	Seagrass	M	L
Gillnetters	Saw fish, Sea turtles, Mobula rays, Manta rays	Endangered	H	Coral reefs	L	M
Handliners	Sea turtles, Mobulas, Manta rays	Endangered	M	Coral reefs	L	L
Longliners	Sharks Mobula rays	Endangered, Vulnerable	H	N/A	L	L

Source: Author's own elaboration.

<sup>3</sup> This table was developed by stakeholders at the workshop held on 11–12 August 2021

## 5. INVESTMENTS, OPERATIONAL COSTS AND EARNING OF SMALL-SCALE FISHING VESSELS IN KENYA

### Capital investments

The survey in 2021 showed that the average initial investment by small-scale fishers in a fishing vessel hull, engines and equipment ranged from nearly USD 6 000 in Kilifi to over USD 20 000 in Mombasa (Table 14).<sup>5</sup> The differences in investment were mainly in the hull of the vessel, which was made for Mombasa vessels of polyester, while made of wood for Kilifi and Kwale vessels. Nearly all vessels made use of outboard motors that had an average cost of around USD 2 500. Investments made in other equipment were minimal.

The choice for investing in a certain fishing vessel type and size depends on:

- a. Expected catch volume and composition
- b. Species of fish targeted
- c. Gear type used
- d. Fishing area (coastal, off-shore, inland, high seas)
- e. Seasonal fluctuations anticipated
- f. Average market price of fish targeted
- g. Social conditions of the community
- h. Legal and regulatory requirements
- i. Availability of credit facilities.

The initial investments made depend to the fishing operations foreseen, and are influenced by the following:

- a. Hull material of the vessel
- b. Size of the vessel
- c. Outboard motor/inboard engine horsepower and brand (quality)
- d. Degree of mechanization and automation of gears and equipment
- e. Quality and capacity of the fishing equipment (cold storage room and fish winches)
- f. Quality and variety of the electronic equipment (e.g. navigation, fish finder)
- g. Number of crew required on board for fishing operations.

TABLE 14

#### Initial investment costs for average fishing vessels (in USD)

	Kilifi 12 m USD	Mombasa 7 m USD	Kwale 12 m USD
Vessel (hull)	3 000	17 500	15 000
Main engine(s)	2 500	2 500	2 000
Equipment on deck	100	0	0
Equipment below deck	0	0	0
Fishing gears (> 3 years lifespan)	0	0	0
Electronic devices	230	380	380
Other	0	0	0
<b>Total</b>	<b>5 830</b>	<b>20 380</b>	<b>17 380</b>

Source: Author's own elaboration.

<sup>4</sup> L: low; M: medium; H: high

<sup>5</sup> In this report 1 USD is equivalent to Kshs 110.00 (Source: Central Bank of Kenya September 2021 Foreign Exchange Rate).

TABLE 15

**The annual costs and earnings of average fishing vessels in Kilifi, Mombasa and Kwale in USD in 2020**

		Kilifi 12 m USD	Mombasa 7 m USD	Kwale 12 m USD
Category	Item			
Earnings	Fishing revenue (gross value of landings)	24 746	47 388	25 600
	Income from other business (e.g. tourism, transport)	1 872	0	16 896
	Subsidies and grants	0	0	0
<b>Total revenues</b>		<b>26 618</b>	<b>47 388</b>	<b>42 496</b>
Running costs	Fuel & lubricants	6 000	3 740	2 400
Running costs	BMU and harbour dues and levies	300	1 421	468
Running costs	Ice	1 200	0	1 200
Running costs	Bait	0	880	1 056
Running costs	Materials (packaging, boxes)	0	330	0
Running costs	Other operating costs	0	0	0
Labour	Labor share, wages and allowances	1 314	19 800	10 400
<b>Total operating costs</b>		<b>8 814</b>	<b>26 171</b>	<b>15 524</b>
Vessel costs	Insurance (vessel, employers, equipment)	530	500	600
Vessel costs	Gear replacements, repairs & maintenance	470	470	470
Vessel costs	Vessel repairs & maintenance	100	100	6 000
Vessel costs	Other fixed costs (family expenses, accountancy, audit and legal fees, general expenses, subscriptions to associations, etc.)	3 600	650	2 000
Capital costs	Depreciation (vessel, engine, equipment, and gears that last more than 3 years)	468	1 338	1 138
Capital costs	Interest	0	0	0
Capital costs	Amortization of intangible assets (fishing permits, licenses, etc.)	0	0	0
<b>Total vessel owner costs</b>		<b>5 168</b>	<b>3 058</b>	<b>10 208</b>

Source: Author's own elaboration.

## Revenues

The average revenues in 2020 ranged from nearly USD 27 000 for vessels in Kilifi to over USD 47 000 for fishers operating in Mombasa. Nearly all revenues by vessels in these two counties came from the sale of fish. The fishing vessels in Kwale County generated substantial income (40 percent) from transport of people and cargo and tourism (Table 15). Vessels are also rented out to transport members of the community during cultural functions.

## Operating and owner costs

The total operational costs of the fishing vessels was split in operating costs (labour + running costs) and vessel owner costs (vessel costs and capital costs), similarly as done in FAO's techno-economic performance reviews (Van Anrooy *et al.*, 2021). The four cost categories used contain the following items:

**Labour costs** = personnel costs = labour share and wages (including social security contributions, life/accident and health insurance), food, other provisions, and crew travel related costs. Unpaid labour was excluded as insufficient information was available on this item.

**Running costs** = energy costs (including fuel, lubricants/oil/filters) and other variable costs (including BMU fees, harbour dues and levies, ice, bait, salt, fish selling costs, packaging materials and other related operational costs).

**Vessel costs** = gear replacements, gear repair & maintenance, vessel repair, and maintenance, other non-variable costs (including vessel, equipment and employer's insurance, accountancy, audit and legal fees, general expenses, subscriptions), fishing licenses, permits, and quota (only annual costs) and the purchase of fishing rights (quotas).

**Capital costs** = depreciation (of the vessel, engines, equipment, and gears that last more than 3 years), interest and amortization of intangible assets (fishing permits, licenses, etc.).

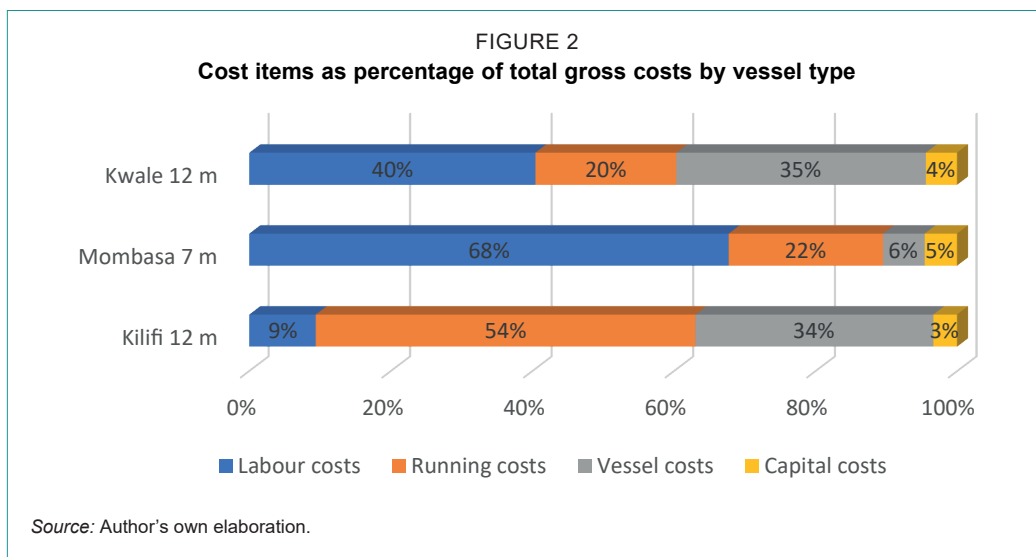
Table 15 includes the cost of operation of a beach management unit (BMU) in Kilifi. Most of the boats used by the BMU were constructed on site; some with wooden hull and others with a fiberglass hull. The Mombasa vessels cost structure is based on data gathered from Bamburi BMU and information from the local Agriculture Sector Development Strategic Programme officer. For the operating costs of fishing vessels in Kwale, Shimoni, individual interviews were held with fishing vessel owners.

The average costs distribution per vessel type is presented Figure 2.

Running cost was the main cost item for fishing vessels operating in Kilifi, adding up to 54 percent of the total annual operational costs. Labour costs in Kilifi were relatively low, as family labour was used. In Mombasa and Kwale the labour costs were the largest cost category with respectively 68 percent and 40 percent of total operating costs. The crew are either paid money from the sale of fish landed, or are given a share of the catch to sell. A common arrangement is that 10 percent of the value of fish caught goes to fuel cost, 10–30 percent of the fish sale proceeds go to the crew, 30 percent to the boat owner and 30 percent cover costs of gears and other equipment. This common arrangement can vary from beach to beach and depends on the catch of the day.

The vessel owners did not have loans for their vessels or outboard motors. The main capital cost was therefore the depreciation of the vessels and outboard motors. Fishing vessels are assumed to depreciate over a period of 10–20 years depending on hull material and the vessel maintenance. Wooden hull vessels last around 10 years while fiberglass vessels can last some 20 years if well-maintained and timely repaired.

The collection of costs and earning information for the assessment was challenging, due to the fact that the fishers do not keep track of their expenses. They do not keep their records, and have not any accounting books or vessel logbooks.





## 6. ECONOMIC AND FINANCIAL PERFORMANCE OF THE SMALL-SCALE FISHING VESSELS

The following financial and economic indicators are commonly used in the performance assessment of fishing operations, and therefore also applied here.

1	Net cash flow (NCF) = total revenues – total gross costs
2	Net profit margin (NPM) = net profit before taxes/total revenues
3	Return on fixed tangible assets (ROFTA) = net profit before taxes/value of tangible assets (note: depreciated asset value is used as tangible asset value)
4	Return on investment (ROI) = net profit before taxes/value of tangible and intangible assets (note: original investment cost is used as tangible asset value for calculation of the ROI here, to distinguish from the ROFTA)
5	Gross value added (GVA) = net cash flow + labour costs
6	GVA to revenue = GVA/total revenues

### Kilifi 12 metre fishing vessels

The average gross profit of vessels in Kilifi was above USD 12 000 and the net profit margin was high with 47 percent. In general, a net profit margin of 20 percent or higher is considered good in most industries. Therefore the average fishing vessels in Kilifi can be regarded as highly profitable in their operations. The return on investment (ROI), which in this analysis takes into account the original investment costs was very high (over 200 percent) for the average Kilifi vessel in 2020.

TABLE 16

**Financial and economic indicators of average fishing vessels in Kilifi, Mombasa and Kwale in 2020 in USD**

		Kilifi 12 m	Mombasa 7 m	Kwale 12 m
Financial & Economic Indicators	Code	USD	USD	USD
Revenue from fish landings	A	24 746	47 388	25 600
Total revenues	A2	26 618	47 388	42 496
Labour costs	B	1 314	19 800	10 400
Running costs	C	7 500	6 371	5 124
Vessel Costs	D	4 700	1 720	9 070
Total gross cost (E) = B + C + D	E	13 514	27 891	24 594
Net Cash Flow (F) = A2 - E	F	13 104	19 497	17 902
Depreciation	G	468	1 338	1 138
Amortization	H	0	0	0
Gross profit (I) = F - G - H	I	12 636	18 159	16 764
Interest	J	0	0	0
Net profit before taxes (K) = I - J	K	12 636	18 159	16 764
Net profit margin (L) = K/A2	L	47%	38%	39%
Value of tangible assets	M	2 230	7 190	6190
ROFTA (N) = K/M	N	567%	253%	271%
Value of intangible assets	O	0	0	0
Original investment costs	M2	5 830	20 380	17 380
ROI (P) = K/(M2 + O)	P	217%	89%	96%
GVA (Q) = F + B	Q	14 418	39 297	28 302
GVA to revenue (R) = Q/A2	R	54%	83%	67%

Note: The information presented is for average vessels in each location. Individual vessels may have much higher or lower indicator values.

### **Mombasa 7 metre fishing vessels**

The average gross profit of the vessels in Mombasa was with USD 18 000 in 2020 higher than for vessels in the other two counties. The net profit margin was very good with 38 percent and return on fixed tangible assets (ROFTA) was high with 253 percent. This means that the earnings in one year were more than double the value of vessel and equipment in the same year. The return on investment (ROI) of 89 percent indicates that the original investment costs in a fishing vessel and equipment can almost be recuperated within one year of fishing.

### **Kwale 12 metre fishing vessels**

The net cash flow of average vessels in Kwale was nearly USD 18 000, and the average gross profit of the vessels was almost USD 17 000 in 2020. The net profit margin was very good with 39 percent and the return on investment (ROI) of 96 percent indicates that the original investment costs in a fishing vessel and equipment in Kwale can almost be recuperated within one year of fishing.

It can be concluded from the above indicators that fishing operations by average fishing vessels in the three counties were highly profitable in 2020. Moreover, the contribution to society by the fishing vessels was high, with gross value added figures ranging from 54 percent to 82 percent.

## **7. INNOVATIONS IN FISHING OPERATIONS**

The fishing vessels, on-board equipment and gears that are used in the Kenyan marine fishing fleets could benefit from a range of improvements. The main improvements identified by the interviewed fishers and stakeholders at the workshop on 11–12 August 2021 reduce fuel costs and save energy. These improvements can both have positive climate change mitigation impacts and reduced operational costs. Other improvements proposed focus increasing fishing efficiency, reducing the environmental (habitat, biodiversity, ecosystem) impact of fishing, improving fish handling and product quality, and improving safety at sea and the working conditions of fishers on board of the vessels (Table 17).

Small-scale fishers commonly prioritized the upgrade of their vessel, towards a larger vessel with higher power outboard motor or inboard engine (category A in Table 17). They aim to move out of the reef area and transfer their fishing operations to the deep waters. They also foresee that other innovations (categories B, C and D) will help them to adjust their fishing methods/operations, and will increase their efficiency and catch per unit effort.

An undecked fiberglass reinforced plastic (FRP) vessel of 7–9 metres with an outboard motor of 75 HP, ice boxes, and modern navigation, communication and safety equipment would require an investment of approximately USD 30 000 to 40 000.

The innovations proposed are used worldwide by semi-industrial and industrial fleets, and small-scale fishers in Europe and North America. However, many of the small-scale fishers in Kenya are not yet ready to adopt these innovations. Their skills and competencies in applying these innovations needs to be increased. For instance, training would be required on the use of fish finders, GPS and skills on navigation at sea. The estimated costs and benefits of specific innovations are hard to quantify because the benefits depend on the use of the innovations in the fishing operations. It is recognized that if the technological innovations are introduced in the small-scale fishing fleets, they will have large benefits to them in terms of increased incomes and improved livelihoods. The transition to fishing operations further offshore may benefit the reef resources, aquatic biodiversity, and support national environmental conservation objectives. The use of ice and cold storage on-board will increase fish quality, fetch higher prices in the market and could contribute to the development of the fish value chain for marine fish in Kenya.

TABLE 17

**Innovations that can result in positive contributions to social, economic and environmental objectives of the fishers, fish consumers and the Kenyan Government**

<b>A</b>	<b>Fishing vessels upgrade/new boats</b>	<ul style="list-style-type: none"> <li>• Purchase of stronger and better boats (to improve safety and expand operations to the deep sea area).</li> <li>• Redesigning the boat hull (to save fuel).</li> <li>• Introduce a fish storage compartment (install central cold storage compartment, or ice boxes to improve fish quality)</li> <li>• Include guardrails (for crew safety).</li> <li>• Install cranes, hydraulic systems for hauling fish nets and longlines (to work more efficiently and with less crew).</li> </ul>
<b>B</b>	<b>Purchase or upgrade equipment on board</b>	<ul style="list-style-type: none"> <li>• Replace small outboard motors with higher capacity motors. Installing 25, 40 or 60 HP outboard motors instead of the currently used 15 HP motors will allow fishers to go further off-shore (depending on the size of the boat).</li> <li>• Use LED lamps to attract fish/fish by night.</li> <li>• Use solar power and wind power (sails) to reduce energy costs.</li> <li>• Introduce distress signals (EPIRB) and water proof bags to protect cell phones.</li> <li>• Purchase and install lifesaving equipment (life rafts, radio communication, EPIRB).</li> <li>• Purchase life jackets for all crew.</li> <li>• Install a vessel monitoring system (VMS) system for vessel tracking and safety purposes.</li> <li>• Install GPS for navigational purposes.</li> <li>• Purchase and regularly inspect firefighting equipment.</li> <li>• Carry on board a medical first-aid kit.</li> <li>• Where the vessel is large -introduce cooking, eating, sanitary and fresh water facilities. Improve working conditions of fishers on board.</li> </ul>
<b>C</b>	<b>Reduce cost of fleet operations</b>	<ul style="list-style-type: none"> <li>• Increase fishing efficiency by installing GPS and fishfinders.</li> <li>• Assist fishers to find new fishing grounds and to target fish in the deep sea/further offshore.</li> <li>• Improve fish handling both at sea and after landing fish at the beaches. Fish handling at sea is difficult due to wave action and lack of operating space. Catches are stored below deck.</li> <li>• Improve safety at sea. Improve communication equipment and contacts with neighboring BMUs to support vessels in emergency situations.</li> <li>• Reduce speed of vessels to reduce fuel use and save on fuel costs.</li> </ul>
<b>D</b>	<b>Acquire new and environmentally safe gears (fishing nets)</b>	<ul style="list-style-type: none"> <li>• Purchase low resistant gears–Seines or fish aggregating device that protect fish and the environment.</li> <li>• Use nets with turtle excluder devices (TEDs) for bottom trawlers and mid-water trawlers.</li> <li>• Use nets with mesh sizes that exclude juveniles and trash fish as categorized by fishers.</li> </ul>

Source: Author's own elaboration.

TABLE 18

**Main innovations proposed by small-scale fishers, their effect on performance and the readiness of the fishers to adopt the innovations**

<b>Innovation subject</b>	<b>How will this innovation affect social/ economic/ environmental outcomes?</b>	<b>Performance Improvement (PI)/ Technology Readiness Level (TRL)</b>
<b>Vessel</b>	A larger and powerful vessel can operate on the deep sea with more unexploited fishing sites, reduce costs of fishing and save energy.	Incremental/Moderate
<b>Equipment</b>	Increased knowledge of spatial distribution of fish at the potential areas of exploitation is possible with GPS and fishfinders. Improved fish finding technologies will make accurate assessment of fishing grounds possible, improve targeting of desired fish species, and reduce bycatch of ETP species and discards.	Incremental/Low
<b>Gears</b>	Use of improved gears will increase catches of target species, reduce costs of fishing, and contribute to implementation of regulations and management measures. Record keeping through logbooks need to be improved as well.	Transformative/Low
<b>Operations</b>	Use of smartphones and VHF radios for communication at sea will increase sea safety. Use of hydraulic net and line hauling devices, cold storage and ice on-board will increase fish handling and hygiene. Organization of fishers in groups or cooperatives will facilitate information sharing and improve access to credit and investment opportunities.	Transformative/Low

Note: the concepts of Performance Improvement (PI) and Technology Readiness Level (TRL) are explained in Appendix 2.

## 8. SOCIO-ECONOMIC ASPECTS OF THE SURVEYED FISHING FLEETS

The marine capture fisheries fleet in Kenya fishing consists of some 3 000 small-scale fishing crafts. The estimated number of marine small-scale fishers is approximately 14 000 fishers. About 50 percent of the workers on the surveyed vessels are full time fisher and the other half is only part time employed. There are a few female fishers in the three counties, but the number of female fishers is on the rise in Kilifi and Kwale. Not much information is available on the age structure of the labour force of these fleets, but the information collected from the vessel owners showed that most of fishers are in the 30–50 age bracket.

Table 20 presents the estimated percentage of fishing vessel crew that have completed certain trainings, participate in social/insurance schemes and have access to various services. The survey found less than one percent of the fishers completed any training on fisheries and that very few small-scale fishers have access to the listed services.

## 9. NATIONAL LEGISLATION, POLICIES AND PLANS FOR FISHING OPERATIONS AND INNOVATIONS

There are a number of policies and legislative documents that guide the management of the fisheries sector and fishing operations in Kenya. The main documents are:

**National Oceans and Fisheries Policy, 2008** (GOK, 2008). This document covers both marine and inland fisheries, and provides the policy and strategy of future fisheries management in Kenya. The policy recognizes the unsustainable utilization of Kenya’s fisheries resources. The policy sets out its overall objective as “to enhance the oceans and 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”.

TABLE 19  
Age distribution in the selected fishing fleets (in percentages)

Age distribution of fishers	Under 20	20–29	30–39	40–49	50–59	Over 60
Male	10	10	30	35	10	5
Female	0	0	50	40	5	5

Source: Author’s own elaboration.

TABLE 20  
Basic services that fishing vessel crew participate in or are covered

Basic Services	Percentage of crew	Comments/observations
General fisheries education/training (completed)	None	No organized trainings are held in the communities.
Basic safety training (completed training)	None	This could be organized by NGOs, with support from financial institutions and marine suppliers.
Social security (participation)	None	Crew are paid daily wages and therefore cannot contribute to the National Social Security Fund (NSSF).
Pension contributions (participation)	None	Crew are hired on a casual basis.
Health insurance (coverage)	None	Fishers need sensitization about the benefits of health insurance.
Accident and life insurance (coverage)	None	Fishers need sensitization about the dangers at sea.
Savings and payment (banking services) services (access to)	Less than 10%	There is a lack of a saving culture.
Fisherfolk organizations/ cooperatives/ unions (participation)	3%	Strengthening these institutions is needed and fishers need to be educated on the benefits of membership.

Source: Author’s own elaboration.

**The Fisheries Management and Development Act No 35, 2016 (GOK, 2016).**

This legislation supersedes the current Fisheries Act CAP 378 (GOK, 2012).

**Kenya Tuna Fisheries Development and Management Strategy 2013–2018 (GOK, 2013).** The tuna management strategy provides a strategic step-by-step guide to the development of an industrialized tuna sector in Kenya, including development of tuna fisheries value chain activities, such as fishing, management, governance, and processing and value addition.

In addition to the above policies, strategies and laws there are **Fisheries (Beach Management Unit) Regulations** that guide the activities of BMUs. The objectives of the BMUs are: to strengthen the management of aquatic resources, to assist with alleviating poverty through good governance, to recognize varying roles played by different community members, to ensure high quality standards, to prevent or reduce user conflicts in the sector.



## REFERENCES

- DoF.** 2021. *Annual Report*: Ministry of Fisheries Development, Kenya. Provincial Headquarters, Mombasa.
- Easton R. W., Merrill B.M., Valeriia ,V., Samantha F., and Tendro,T. R.** 2021. *Distant water industrial fishing in developing countries: A case study of Madagascar*. doi: <https://doi.org/10.1101/2021.05.13.444019>
- FAO.** 2020. *The State of World Fisheries and Aquaculture (SOFIA)*, p. 244. <https://doi.org/10.4060/ca9229en>
- Fondo, Esther N.** 2004. *Assessment of the Kenyan Marine Fisheries from Selected Fishing Areas*. United Nations University Fisheries Training Programme, Iceland. [www.unuftp.is/static/fellows/document/estherprf04.pdf](http://www.unuftp.is/static/fellows/document/estherprf04.pdf).
- Fondo E.N.** 2008. *Cephalopod fishery in the south coast of Kenya*. In: South coast project report. KMFRI Technical Report. 220 pp.
- GOK.** 2008. *National Oceans and Fisheries Policy*. Government of Kenya, Ministry of Fisheries Development. Available at: [www.kenyafisheriesservice.go.ke/wp-content/uploads/Fisheries-Oceans-Policy-of-2008.pdf](http://www.kenyafisheriesservice.go.ke/wp-content/uploads/Fisheries-Oceans-Policy-of-2008.pdf)
- GOK.** 2012. Fisheries Act CAP 378. Government of Kenya. Available at: [www.kenyafisheriesservice.go.ke/wp-content/uploads/Fisheries-Act\\_Cap378\\_revised-2012-1.pdf](http://www.kenyafisheriesservice.go.ke/wp-content/uploads/Fisheries-Act_Cap378_revised-2012-1.pdf)
- GOK.** 2013. *Kenya Tuna Fisheries Development and Management Strategy 2013–2018*. Government of Kenya. Available at: <https://aquadocs.org/handle/1834/9088>
- GOK.** 2016. *Fisheries Management and Development Act, 2016 (No. 35 of 2016)*. Government of Kenya. Available at: [www.ecolex.org/details/legislation/fisheries-management-and-development-act-2016-no-35-of-2016-lex-faoc160880/#:~:text=35%20of%202016\).,-Country%2FTerritory%20Kenya&text=An%20Act%20of%20Parliament%20to,Services%3B%20and%20for%20connected%20purposes](http://www.ecolex.org/details/legislation/fisheries-management-and-development-act-2016-no-35-of-2016-lex-faoc160880/#:~:text=35%20of%202016).,-Country%2FTerritory%20Kenya&text=An%20Act%20of%20Parliament%20to,Services%3B%20and%20for%20connected%20purposes)
- Gutiérrez, A.T. and Morgan, S.** 2017. *Impediments to fisheries sustainability–coordination between public and private fisheries governance systems*. *Ocean & Coastal Management*. 135(79–92).
- Hicks CC, McClanahan TR.** 2012. *Assessing Gear Modifications Needed to Optimize Yields in a Heavily Exploited, Multi-Species, Seagrass and Coral Reef Fishery*. *PLoS ONE* 7(5): e36022. <https://doi.org/10.1371/journal.pone.0036022>  
[www.oceandocs.org/bitstream/handle/1834/6844/ktf0252.pdf?sequence=1](http://www.oceandocs.org/bitstream/handle/1834/6844/ktf0252.pdf?sequence=1) <http://www.thefishsite.com/fishnews/18014/germany-israel-in-bid-to-help-save-lake-turkana-fish/>
- ICES.** 2020. *ICES Workshop on Innovative Fishing Gear (WKING)*. ICES Scientific Reports. 2:96. 130 pp. <http://doi.org/10.17895/ices.pub.7528>
- Kaunda- Arara B. and Rose G. A.** 2004. *Effects of marine reef National Parks on fishery CPUE in coastal Kenya*. *Biological Conservation*. Volume 118, Issue 1, June 2004, Pages 1–13.
- Kimani, E. N., Okemwa, G. M., and Kazungu, J. M.** 2009. *Fisheries in the Southwest Indian Ocean*. The Henry L. Stimson Center, 18. <http://hdl.handle.net/1834/10514>
- KNBS.** 2021. *Economic Survey 2019. Kenya National Bureau of Statistics*. [www.knbs.or.ke](http://www.knbs.or.ke) (cited on 15 September 2021).
- Mbaru, Emmanuel Kakunde.** Rhodes University. 2012. *An Assessment of the Kenyan Coastal Artisanal Fishery and Implications for the Introduction of FADs*. M.Sc. thesis.
- Mueni E, Manyara JO, Waweru G, Kimani EN.** 2016. *Stock assessment of the shallow water lobsters in Kenya*. KMFRI Technical Report. 66 pp
- Munga, C.N., Mwangi, S., Ong’anda, H., Ruwa, R., Manyala, J., Groeneveld, J.C., Kimani, E. and Vanreusel, A.** 2013. *Species composition, distribution patterns and population structure of penaeid shrimps in Malindi-Ungwana Bay, Kenya, based on experimental bottom trawl surveys*. *Fisheries Research* 147: 93–102.
- Munga, C.N., Kimani, E., Ruwa, R.K., Vanreusel, A.** 2016. *Species Composition of Fisheries Resources of the Tana and Sabaki Estuaries in the Malindi-Ungwana Bay, Kenya*. In: Diop, S., Scheren, P., Ferdinand Machiwa, J. (eds) *Estuaries: A Lifeline of Ecosystem Services in the Western Indian Ocean*. *Estuaries of the World*. Springer, Cham. [https://doi.org/10.1007/978-3-319-25370-1\\_2](https://doi.org/10.1007/978-3-319-25370-1_2)

- Muthiga N, McClanahan TR.** 1987. *Population changes of sea urchin Echinometra mathae on an exploited fishing reef.* African Journal of Ecology 25: 1–8.
- Okemwa, G. M., Kaunda-Arara, B., Kimani, E. N., and Ogutu, B.** 2016. *Catch composition and sustainability of the marine aquarium fishery in Kenya.* Fisheries Research, 183, 19–31.
- Ruwa, R.K., Habib, G., Mukira, M., Okoth, G., and G. Mwatha.** 2003. *Profile of Kenya Marine and Fisheries – Country Working Resource Document.* GEF-South- West Indian Ocean Fisheries Project (SWIOFP) in Kenya Publication No. 1 (2003), 71pp.
- Samoilys M., Osuka K., Muthiga N., Harris A.** 2017. *Locally managed fisheries in the Western Indian Ocean: a review of past and present initiatives,* iv + 40pp. WIOMSA. WIOMSA Book Series 17.
- Tuda, P.M.; Wolff, M.; Breckwoldt, A.** 2016. *Size structure and gear selectivity of target species in the multispecies multigear fishery of the Kenyan South Coast.* Ocean and Coastal Management. 130:95–106.
- Van Anrooy, R., Carvalho, N., Kitts, A., Mukherjee, R., Van Eijs, S. Japp, D., and Ndao, S.** 2021. *Review of the techno-economic performance of the main global fishing fleets.* FAO Fisheries and Aquaculture Technical Paper No. 654. Rome, FAO.

## APPENDIX 1

### STOCK STATUS AND FISHERIES MANAGEMENT PERFORMANCE SCORING

The assessment methodology applied follows the definitions for indicator scoring categories and the colour scheme used by Marine Stewardship Council (MSC) and by FisheryProgress.org, with green denoting good to exemplary practice (MSC score 80 or greater), yellow denoting acceptable practice with room for improvement (MSC 60 to 79), and red denoting weak practice (less than MSC 60).

Numeric scoring range	General definition of management performance
<b>&lt;20</b>	<p>No management system or strategy exist, and no control over the fishery is exercised or planned. Fishery may be completely open access with no framework with which to develop management.</p> <p>No information on stock status exists, nor is there information to evaluate productivity or susceptibility of target species. There is no proposed program to collect data.</p>
<b>20–39</b>	<p>Management is very poor and/or critically flawed due to a lack of resources or lack of political will.</p> <p>Poor information is available on impacts to target stocks and other species, and it suggests overfishing or high susceptibility. There is no basis on which to develop reference points.</p>
<b>40–59</b>	<p>Key aspects of management remain insufficient or ineffective, likely due to a lack of resources but not lack of will or framework.</p> <p>Generic stock reference points are available, but available information suggests that stocks are overfished and that fishing activity causes some impact to the habitat and ecosystem.</p>
<b>60–79</b>	<p>Some important management aspects may be lacking, but none are sufficient to prevent a passing rating by themselves. Monitoring and enforcement is in place and believed effective.</p> <p>Information is available to estimate fishing mortality and effects on non-target and ETP species, and the fishery is unlikely to hinder ETP recovery. Habitat and ecosystem impacts are possible, though the fishery is unlikely to cause serious or irreversible harm.</p>
<b>80+</b>	<p>Management measures in place are expected to be effective, and precaution is accounted for.</p> <p>Stock-specific reference points are available and show that biomass is highly likely above a limit and is fluctuating around a target (normally MSY). Information is available to assess fishing mortality and impacts on non-target and ETP species. There is strong evidence that the fishery is not causing serious harm to habitats or ecosystems.</p>

Source: Author's own elaboration.



## APPENDIX 2

### PERFORMANCE IMPROVEMENT AND TECHNOLOGY READINESS LEVELS

The introduction of innovative, environmentally friendly, and smart fishing technologies is often cumbersome and slow. Depending on the expected potential impact on the performance improvement, compared with the conventional fishing gear, a performance indicator corresponding to a four-level grading system was defined:

**1. Incremental performance.** It can be considered an innovation with a minimal or small performance improvement. Typically, they are existing fishing gears or technologies, used in other fisheries in the area or in similar fisheries in other areas, introduced into a specific fishery that has never used these gears/technologies before;

**2. Transformative performance.** This innovation might provide significant performance improvement compared to conventional systems (baseline). It can be any fishing gear or technology used in the given area or in other areas but modified from the regulated operation or commercial practice;

**3. Disruptive performance.** It is a novel solution compared to conventional systems and offers potential for significant step-change performance improvement compared to current baselines. This is usually a new developed fishing gear or technology that has rarely or never been used in commercial fisheries anywhere in the world.

**4. Negative performance.** It is a new fishing gear or technology without much benefits, or having negative effects on, one or more Criteria of Assessment (catch efficiency, selectivity on target and non-target species, and environmental impact) compared to baselines. These innovations are relatively rare or short-lived as the market/consumer rejects them.

Technology readiness levels adopted in the European Union, and tailored TRL categories for the assessment of the technical readiness of innovative gears.

TRLs category (technical readiness parameter)	European Union TRLs scale
<b>Low</b>	TRL 1 – Basic principles observed TRL 2 – Technology concept formulated TRL 3 – Experimental proof of concept
<b>Moderate</b>	TRL 4 – Technology validated in lab TRL 5 – Technology validated in relevant environment ( <i>industrially relevant environment in the case of key enabling technologies</i> ) TRL 6 – Technology demonstrated in relevant environment ( <i>industrially relevant environment in the case of key enabling technologies</i> )
<b>High</b>	TRL 7 – System prototype demonstration in operational environment TRL 8 – System complete and qualified TRL 9 – Actual system proven in operational environment ( <i>competitive manufacturing in the case of key enabling technologies</i> )

Source: Report of the ICES Workshop on Innovative Fishing Gear (WKING) (ICES, 2020).

## ANNEX 3

### VALIDATION WORKSHOP

### BEAUMONT REPORT MTWAPA, KILIFI COUNTY

11–12 AUGUST 2021

#### SUMMARY REPORT



Photo 1: Group photo of participants

#### INTRODUCTION AND BACKGROUND

The stakeholder workshop was convened for the purpose of presenting and validating the survey findings and providing a forum for discussion among key stakeholders. Several institutions and individuals from the financial- and fisheries subsector were invited for the two-day workshop held from 11–12 August 2021 at Beaumont Resort in Mtwapa (Kilifi County).

#### Objectives of this workshop

- Present the results from the stakeholder analysis, field visits and surveys that were carried out in the first phase of the project, receive feedback, and validate the results.
- Present the results from the analysis of the current fishing technologies and possible innovations, receive feedback and validate the results.
- Provide a platform for different stakeholders (financial institutions, fisherfolk organizations, fishers) to share their respective assessment of the state of the sector and the sector's access to finance.
- Identify and share fisheries technologies and innovations suitable to receive credit.
- Offer a chance to all stakeholders to stay involved and collaborate leading to more investment, product development and credit facilities for the sector.

## Expected outputs

- Identification of capacity building activities, technologies, innovations that may ultimately be tested in the field and scaled up for the benefit of small-scale fishers (SSF).
- The mutual understanding of the various stakeholder groups (financial service providers [FSPs], fishers, fisherfolk organization) is increased.
- Establish a network or task force to support the development of microfinance and credit services to the SSF.
- Incorporate feedback received during the workshop and develop a strategy paper on the uptake of innovation in the small-scale fisheries sector and the potential for increasing investments and access to finance.

**Target participants:** fishers, fisherfolk organizations, Beach Management Units (BMUs), national and county government representatives, financial and non-financial service providers including village savings and loan associations (SACCOs), accumulating savings and credit associations (ASCAs), table banking and self-help groups), learning institutions, input suppliers and other public and private agencies.

## SUMMARY OF THE WORKSHOP

### Opening remarks

Mr John Amimo, head of programmes, AFRACA, moderated the workshop. He welcomed the participants and conducted a self-introduction of those present. He also acknowledged that some stakeholders were participating virtually.

### Statement from FAO Lead Technical Officer, Mr Martinus van der Knaap

Mr van der Knaap underlined the importance of devising sustainable solutions towards protecting the coral reefs that face the risk of depletion. He mentioned that the potential in the Indian Ocean was yet to be exploited. He further called for closer collaboration between SSF and the financiers to exploit the huge potential that existed in the fishing industry. He lamented that the fishing gears and vessels used by fishers were outdated and called upon the users to improve on them. Mr Martinus concluded by stating that FAO was working very closely with AFRACA in addressing strategies for financing the fishers so as to significantly boost the value chain.

### Remarks by the AFRACA Secretary General, Mr Thomas T. Essel

The secretary general lauded the collaboration between AFRACA, FAO and the Government of Kenya in implementing the MDF project in Kenya whose objective is to boost financing for innovations for sustainable fisheries through collaborative efforts with the private sector. He challenged the key stakeholders along the SSF value chain to embrace innovation to improve their fishing businesses.

He added that the objective of the workshop was to disseminate findings of the study that was conducted by AFRACA and FAO to gather more evidence on the financing challenges and constraints faced by SSF along the Kenyan coast. He asked all actors to work towards exploring ways and means of empowering the fishers and financial institutions to promote access to appropriate credit facilities.

Some of the findings revealed through the study remain of great concern to him. Most of the fishers for example avoided borrowing from financial institutions due to various reasons, including very high interest rates. He discouraged the behaviour of shunning access to financial services given that it hindered progress in the sector. Also worrying is the inability to access seafood easily in the market, partly attributable to fishers' landing their fish in the afternoon, making it a challenge to get fresh

supplies in the morning or earlier in the day. He also referred to some serious supply chain issues due to low and high fishing seasons, with lack of proper storage facilities during the latter. Inconsistency in both quality and quantity in the supply chain is a major setback in any value chain. From the coral reef fish capture, the fishers have limited control over the fish species of their catch. The Secretary General reiterated that the objective of the exercise was to improve the livelihoods of SSF in Kenya.

**Official opening remarks by Mrs Lucy Obungu, Fisheries, Aquaculture and Blue Economy Secretary, State Department for Fisheries, Aquaculture and Blue Economy, Kenya**

Mrs Obungu noted that the primary focus of the workshop was to validate the surveys undertaken. She noted that private sector involvement in the fish value chains would bring about the much desired innovation. Additionally, she observed that a lack of knowledge and skills continued to impede the exploration of marine life in the ocean, yet that the industry remains a major employer for many people in the region. The Secretary called for Public Private Partnership (PPP) arrangements going forward. There is already demonstration of government goodwill to the SSF through provision of equipment and extension support. With the private sector playing a pivotal role through a tripartite approach, there is no doubt that the SSF sector can be transformed when given adequate and appropriate support. On that note, she wished the participants fruitful deliberation during the workshop and declared the meeting open.

**PRESENTATION OF FIELD & SURVEY FINDINGS**

**Presentation by Prof Charles Ngugi (FAO consultant) on current fishing technologies and innovations (summary of key findings)**

- There are many incidents where fishers accidentally lose their fishing gear in the water or just leave it behind, which can potentially kill considerable numbers of marine animals. Modern synthetic material does not biodegrade and gear lost, discarded or unchecked by fishers can continue to catch fish, sharks and other animals indefinitely. Ghost fishing from these nets is a conservation concern.



Photo 2: crew members and boats anchored at Mnarani Kilifi landing site, Kenya

- Although not quantified, the current fishing methods have a detrimental impact on the ecology of the near shore environment, mainly the coral reefs. Of particular concern are the large amounts of bycatch (mainly juvenile fish but also marine mammals and sea turtles on some occasions) and destructive fishing gears and ghost fishing leading to loss of habitats.
- The main challenges facing Kenya's fishery sector include environmental degradation, seasonal variability, overfishing, declining stocks and postharvest losses. Management interventions developed over the years include introduction of co-management structures mainly the Beach Management Units (BMUs) and marine protected areas. BMUs were initially mandated with the

management of fishing operations and conservation of the local environment, development and implementation of fisheries management plans at the local level. BMUs at the Kenyan coast are key players in the fish value chain.

Whereas they do charge fees and manage levies for the benefit of their members, such levies and/or fees are not adequate to cater for the operational costs of the BMUs. It is worth noting that BMUs in their current form are not structured for development and investment purposes. However, they keep records of all their members and the fish landed at their beaches. The BMUs mandate, as provided under section 38 of the *Fisheries Management and Development Act*, is limited to co-managing the fisheries resources with the national and county governments.

- There have been numerous interventions by the Government of Kenya and development partners to support the SSF sector. Investments have been committed to the coastal region in the fisheries sector in different projects including the Agricultural Sector Development Support Programme (ASDSP) and Kenya Marine Fisheries and Socio-Economic Development (KEMSFED). Much of this funding has been directed to improving community livelihoods rather than promoting sustainable fishing enterprises. The informal way through which the SSF conduct their business is a contributory factor to this. Different government state departments and agencies need to take a collaborative approach to address this concern. Notably among the government departments and agencies are the Department for Fisheries, Aquaculture and Blue Economy, Department for Co-operative, Department for Trade, Department of Social Services, Micro and Small Enterprises Authority (MSEA), Kenya Marine and Fisheries Research Institute (KMFRI), county governments, KEMSFED and ASDSP.
- Safety at sea and fishing guidelines: The arrangements for fishers' safety at sea need to be improved. No defined structure or program exists with regards to life insurance coverage, training on safety at sea or search and rescue services. SSF prefer training that would provide special skills in sea safety, weather forecasting, and maintenance of equipment and communication while at sea. BMUs through their own initiative do document any time a crew is leaving for the sea and the estimated time of return. By doing so, they are able to reach out to such crews for in case rescue is needed.

In closing, Prof Charles Ngugi outlined recommendations on how to bolster the SSF sector:

- There is a need to upgrade current fishing vessels to enable them go beyond the coral reef where large pelagics could be caught.
- SSF need access to new gears (fishing nets) that are environmentally friendly and reduce by-catch and adoption to new methods of fishing that are more efficient.
- Self-regulation and best management practices of the fisher's organizations need to be enhanced.
- There is a need for increasing sources of funds to develop technologies and spur innovation. This may be done through a combination of fishers being exposed to and prepared for what FSPs require from them, FSPs being strategic in their plan based on prospects of blue economy, and the government and development partners giving more support to FSPs.

### **Presentation by Steven Otieno (consultant for AFRACA) on the assessment of financial service provision to SSF in Kilifi, Mombasa and Kwale**

Mr Otieno presented the survey findings which are presented in detail in Annex 1 of this circular (and thus missing in this summary). After the presentation, the following thoughts were exchanged during the discussion of the survey findings among the participants of the workshop:

- Participants noted that the targeted fishers' organizations were BMUs whose mandate is limited to providing services under the Fisheries Management and Development Act. A BMU's mandate is to ensure orderly, safe and effective use, management and operation of fish landing sites. A BMU can take measures to raise awareness and provide training to its members in fishing techniques. Further, A BMU might support marketing and processing of fish, financial management and

also support cooperative and fishers' self-help groups. BMUs can be authorised by the fisheries department to have a designated co-management area to undertake fishing in. BMUs are thus not enterprises.

- The definition of SSF as provided for in the aforementioned act is limited to boat size. Most of the BMU members (55 percent) of those interviewed were traders, processors or carry out other associated services in the value chain and do not fit this definition. By and large, boat owners do not go fishing but hire the services of captains and crewmembers.
- Of the SSF respondents, 42 percent indicated that their businesses were formalized, a number which seemed very high given the circumstances in Kenya. The study did not further interrogate their understanding of formalization and the result was thus discarded.
- Whereas there was general feedback on a low saving culture among the respondents, it would have been important to understand if they have bank accounts, which was not captured by the survey.
- The survey had a selection bias towards commercial banks and microfinance institutions. It did not consider sufficiently well other traditional forms of accessing financing including the village savings and loan associations, accumulating savings and credit associations, table banking and self-help groups.
- Participants disputed the study's finding on the average income of fishers. Many were of the view that individual fishers' earnings were higher than the reported average annual income of about USD 700.

## PRESENTATION OF CASE STUDIES FROM PARTICIPANTS AND PANEL DISCUSSION

The workshop included a panel discussion for representatives of these stakeholders to present their organizations' work. Specifically, they were Imarika Sacco, Ustadi NGO, ASDSP, Bamburi BMU, Kenya Women Microfinance Bank, KUSCCO and Captain Andy's.

### Imarika SACCO

Imarika SACCO, formerly known as Kilifi Teachers SACCO, is one of the leading savings and loan associations in the coastal region. With its headquarters in Kilifi town, it also serves the other two targeted counties of Mombasa and Kwale where it has a significant footprint. Imarika SACCO reported that they have a specific loan product called Mtaji Loan that targets SSF. The loan comes with an interest rate of 1 percent per month on a reducing balance. Borrowers can access funds between Ksh. 5 000 – 500 000 (between USD 46 – 4 600).<sup>1</sup> Imarika SACCO also clarified that the loan was also available to BMU members as long as they can co-guarantee each other. Since its launch however, the loan product had been poorly patronized by SSF. SACCOs engage only with members who save with them. The poor savings culture among the SSF is directly correlated to this, thus Imarika SACCO stressed the need for financial literacy on savings.

### Ustadi NGO

The Ustadi Foundation supports capacity building initiatives that aim to empower communities in Kenya towards using sustainable agriculture, enterprise development, food security and nutrition, access to water and sanitation and climate change adaptation. Ustadi's representative gave a rundown of some of their capacity building interventions in the region. Reference was made to their work with a group of motor bike (boda-boda) operators who are also fishers. One of the key lessons from working with the groups involved changing their mind-set to adopt an entrepreneurial approach to their business. To diversify their incomes, the group has since opened several fish selling points in Kilifi and also acquired a fishing boat to support their business.

<sup>1</sup> This was calculated using the 1 July 2021 exchange rate of 1 USD = 108 KES (Source: [www.xe.com/currencycharts](http://www.xe.com/currencycharts))

## **Agricultural Sector Development Support Programme (ASDSP)**

The Agricultural Sector Development Support Programme (ASDSP) is a sector wide program implemented by the Government of Kenya in collaboration with development partners. It aims to support the implementation of the agricultural sector development strategy 2010–2020 and the transformation of Kenya’s agricultural sector into an innovative, commercially oriented, competitive modern industry that will contribute to poverty reduction and improved food security in rural and urban Kenya. The ASDSP, under the State Department for Agriculture, is implemented in all the 47 counties in Kenya. The project prioritizes three value chains in each county. Marine fisheries is one of the priority value chains in Mombasa County. The other two value chains are local vegetables and indigenous poultry. The ASDSP Mombasa county coordinator gave an update of the work with some of the BMUs. ASDSP is currently assisting Bamburi BMU to draw up its business plan for members. ASDSP’s focus in Mombasa is to aggregate marketing groups, enhance utilization of market information and promote access to financial services. ASDSP mentioned that input suppliers (those selling boats and gears) for the fisheries sector also have challenges in accessing finance. Most fishers preferred being members of village savings and credit associations, because they feared being auctioned by the mainstream FSPs. She mentioned that most members of the table banking groups were women and they would keep the money in a metallic box in the treasurer’s house.

## **The Kenya Women Microfinance Bank (KWFT)**

KWFT has continued to provide opportunities to thousands of families gradually uplifting them out of poverty and elevating them to improved living standards, for over three decades now. KWFT received the license for deposit taking business in March 2010 from the Central Bank of Kenya and it prides itself in being the only financial institution in Kenya that serves a unique niche market, focussing on female customers. The regional manager highlighted some of the bank’s financing efforts to SSF. KWFT has existing loan products that can be accessed by fishers and their groups. The bank is active in aquaculture and had extended several loans to aquaculture enterprises in the country. They also have a micro-asset loan, which was designed to support acquisition of machinery and equipment such as fishing vessels and gears.

## **Captain Andy’s Fishing Supply Ltd**

Established in 1997, the company offers a range of maritime solutions and equipment, ranging from boats, engines, marine electronics to safety equipment. The company elaborated on some of the accredited marine training certification courses that were offered by the company and the affiliated Royal Yachting Association. The company’s representative lauded the efforts of AFRACA and FAO in developing the capacity of artisanal fishers, which would go a long way in improving sustainable fishing and their livelihoods. He mentioned that the company had developed business relationships with BMUs, which were then able to access their products and services at a concessionary rate.

## **Kenya Union of Savings and Credit Co-operative Societies (KUSCCO)**

KUSCCO works in collaboration with the World Council of Credit Unions (WOCCU) in implementing technology and innovations for financial inclusion. It seeks to better the performance in lending to small and medium enterprises (SME). This intervention addresses the challenges of SACCOs’ lack of familiarity with SME in general, SACCOs’ lack of tools for SME loan assessment and lack of business planning skills in SME. KUSCCO’s Kilifi office indicated that through their agribusiness unit they provided such direct support to SACCOs.

## **Bamburi Beach Management Unit (BMU)**

The BMU affirmed some of the challenges small-scale fishers were facing, such as lacking technical knowledge and skills to venture into the deep seas. Lacking collateral also is a major impediment due to poverty. Most fishers were therefore unable to access loans. The BMU's representative asked the banks to lower their collateral expectations. She lauded the government efforts in supporting BMUs in the county. Each BMU currently has two boats at courtesy of the county government. The BMU is also supported by two university leavers who had been engaged in the promotion of blue economy initiatives aimed at empowering women in particular.

## **SUMMARY OF DISCUSSIONS & KEY OUTCOMES**

The discussions that followed the presentations were diverse. This report clusters participants' views and comments within four broad topics as outlined below:

### **Uptake of innovations and technology by SSF**

- The plenary acknowledged and welcomed the concerns of the presenters towards sustainable fishing. The key concern was the limited availability and use of fishing technology. It is necessary for fishers to be supported to embrace new innovations and technology that will enable them to engage in sustainable fishing practices, more so to stop the gradual depletion of fish resources within the coral reefs.
- Upgrading fishing vessels would be a key priority if fishers were to move out of the reef and fish in the deep waters. There is a need, therefore, for fleet improvement that covers a range of equipment from the acquisition of stronger and better boats, redesigning of boat hull and introduction of fish storage compartment, e.g. central cooling compartments. These require capital that is beyond the reach of the SSF.
- Multiple ownership of fishing vessels and associated equipment could be a constraining factor for further improvements. It creates mixed signals to financial institutions, which require adequate and authentic collaterals as basis for lending to fishers. It is only the boat owner who can use his vessel as a collateral, and boat owners rarely go to sea but are rather entrepreneurs using a business opportunity. Thus, the demand for collateral by financial institutions becomes a big challenge to those fishers who do not own any business equipment.
- Most vessels operated by SSF are not insured. One of the representatives from Bamburi BMU confirmed that one of their vessels was insured as it operates as a tourist vessel. This is why it needed to obtain insurance.
- Captain Andy's complemented the findings presented by Prof Charles Ngugi, by creating awareness on the availability and accessibility of new fishing technology in the region that is in line with global standards. However, accessibility of SSF is limited by finance. Captain Andy's has several outlets in the region and also has business relationships with some of the BMUs as they remain more credible to deal with than individuals. The existing relationship is based on provision of technical support for the use of purchased equipment as well subsidized rates for BMU members.
- Mtwapa BMU was mentioned as the only BMU that provides boat-making services whose prices were comparably lower than Captain Andy's and considered affordable by fisherfolk. However, quality-wise, Captain Andy's boats are regarded as better and more durable.

### **Issues concerning individual fisherfolk**

- There was an extensive discussion on a working definition of a small-scale fisher within the context of the project. After prolonged deliberations participants agreed to maintain the existing definition as specified in law, which is based on the size of the boat which is maximum 12 metres in length.



- There was no clear indication on the proportion of individual fishers operating formal bank accounts as fishers had other sources of funding such as village savings and loan associations (VSLAs), accumulating savings and credit associations (ASCAs), table banking and some other (sometimes digital) lending platforms.
- Mtwapa BMU supported the study findings on the savings culture among women and emphasized that any future financial intervention with fishers should aim at targeting women. The study revealed that women in the local community have a strong saving culture through table banking groups, VSLAs, ASCAs and merry-go-round. During administration of the survey, some of the male respondents alluded to even borrowing through some of the afore-mentioned groups.

### **Issues concerning BMUs**

- While the cooperative model was preferred as a way of transforming BMUs into enterprising organizations, their historical antecedents regarding management issues meant that it would be prudent to identify reasons that accounted for the collapse of ten fisheries cooperatives along the Kenyan coast.
- Notwithstanding, common interest groups (CIGs) within BMUs are slowly emerging as organized groups and forming associations, self-help groups and even cooperatives among the fishmongers, boat makers and repairers, etc.
- Kenya Fisheries Services (KeFS) and the ASDP coordinator emphasized that the current law encourages the formation of such entities, thus the MDF project should focus on supporting the formation of such groups.
- In support of the above, KeFS mentioned the Coastal Women in Fisheries Entrepreneurship (CWIFE) as an example of an entrepreneur group that was established within a BMU framework. The members of CWIFE are entrepreneurial women from Mombasa County drawn from various BMUs under the leadership of Bamburi BMU.

### **Issues concerning financial service providers (FSPs)**

- It was suggested by fishers that more flexibility was required among financial service providers, especially in lowering their collateral expectations. The response from the financial institutions showed that some kind of security is required for lending out depositors' money. Due to the high poverty levels among SSF, most fishers do not have land title deeds. Even worse was that fishing vessels and equipment did not have ownership certificates and logbooks, hence cannot be used as a collateral. However, the availability of group loans could mitigate this challenge. Imarika, Faulu and KWMB have group loan products. As a rejoinder to the above, Mr Gitonga informed the workshop that there were on-going efforts by the Kenya Maritime Authority (KMA) to issue logbooks to shipping vessels.
- Financial institutions should also take into account that most of the fishers are of Muslim faith hence financial products should aim to be sharia compliant.
- It was observed that grants and cheap loans dominated the SSF sector for some time, which generated a high dependency culture on free money by fisherfolk communities. These communities may not readily embrace commercially available credit facilities.
- Solidarity groups and social guarantees was a widely accepted form of collateral among microfinance institutions. On the question on whether BMU officials can guarantee the members to access loans from banks, the BMUs said that this could only be done for specific members based on their character.

## CONCLUSIONS AND WAY FORWARD

At the conclusion the workshop the following recommendations were made by the participants:

### Individual fisherfolk

- **Change of mindset:** There is a need for a paradigm shift, from artisanal to semi-industrial fishing practices that will facilitate sustainable fishing along the Kenyan coast. Participants were in concurrence that the starting point in building the capacity of fishers was in changing their mindset. The project for example can develop a business case by providing a cost-benefit analysis that compares new technology *vis- a-vis* the existing technologies.
- **Financial literacy:** There is a need to enhance financial literacy among fisherfolk to improve their savings culture, and help address the issue of delinquency in the event they take up loans.
- **Fish handling practices.** It is important to demonstrate to the SSF the best post-harvest fish handling practices. The SSF organizations confirmed fish spoilage during high season (September – April). They would need to be encouraged to invest in preservation, including the adoption of the use of green energy.

### Beach Management Units (BMUs)

- **Strengthening the role of BMUs:** BMUs should be made more vibrant in their activities and strengthened in the formation and formalization process of cooperative societies. In this regard, the MDF project can do studies that provide evidence of successful cooperative models. An example from Lamu County was pointed out by a workshop participant. This could be disseminated to both BMUs and government stakeholders to support the cooperative agenda among SSFs in future.
- Cooperatives remain the most suitable vehicles for serving the fishers within a structured legal framework. The roles of the BMUs do not in any way, overlap or conflict with that of fisheries cooperatives.
- **Financial Record Keeping:** Proper record keeping should be emphasized as a way of promoting transparency and accountability within the BMUs operations.
- **Strengthening the role of Women in SSF:** Women play a critical role in the SSF industry along the Kenyan coast, not only as traders, but also financial actors. It is critical that the project looks at how their existing role can be strengthened. Developing training materials for BMUs to encourage common interest groups to formalize their enterprises could be an area for intervention.

### Financial sector institutions

- **Support financial product development for SSF:** To augment and complement current efforts by financial sector players, such as Imarika SACCO and Kenya Women Microfinance Bank, AFRACA and FAO can develop resources to improve uptake and outreach of financial products. Examples of resources that can be developed include risk assessment guidelines for the SSF sector, guidelines on incorporating Islamic finance in traditional finance, working with institutions to review loan features and market strategies.

### Establishment of a network

To enhance communication among participating stakeholders and continue with the discussions beyond the workshop, the meeting agreed to constitute a network to be referred to as CAFI-SSF KENYAN CHAPTER. Participants agreed to share their contact numbers to form a WhatsApp group that will be used as the first channel for communication and exchanging ideas. The network also agreed to convene quarterly.

### **Closing remarks – by Professor James Njiru, Director General, KMFRI**

Professor Njiru thanked the organizers FAO, AFRACA, the government of Kenya. He acknowledged the good work that had been done by the consultants. He urged all to further look into mechanisms for exploring deep-sea fishing and underscored the need to do capacity building of all concerned and more seriousness in the manner of doing business necessary for sustainability. He also urged the fishers to develop entrepreneurial minds at the expense of the handout culture.

### **Media coverage**

The Workshop attracted media coverage from one of the leading newspapers, the STAR, which did an extensive publication. So far, the media has expressed strong interest to continue the coverage of the MDF project initiated dialogue.



## **ANNEX 4**

### **TRAINING MATERIAL**

#### **Training: Financing innovation for sustainable fisheries with the private sector (abridged version)**

Module 1: Overview of the small-scale fishing sector in Kenya

Module 2: Role of financial service providers in promoting innovation and investment in the small-scale fishing sector in Kenya

Module 3: Wrap up, key recommendations on financing innovation in SSF

#### **Module 1 : Overview of the small-scale fishing sector in Kenya**

## UNIT ONE

### Session 1

Fisheries' contribution to the  
Kenyan economy



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## Fishing in Kenya



Kenya's fishing industry contributes about 0.5 percent to national GDP and about 2 percent to national export earnings.

The industry employs over 60 000 fishers directly and an estimated 1.2 million people directly and indirectly within fishing, production and the supply chain.

These incomes and livelihoods are supported by the freshwater lakes Victoria, Turkana, Naivasha, Baringo, the Rivers Tana, Athi-Sabaki, Nzoia, Yala, man-made dams, as well as the coastal and the open sea ecosystems.

## Fishing in Kenya



Kenya's marine fisheries can be classified into two subsectors: the coastal artisanal fishing, and the Exclusive Economic Zone (EEZ) fishing.

The EEZ fishing is characterized by distant-water fishing vessels which mainly employ purse-seine and long-line in the exploitation of tuna.

The potential of these resources is estimated between 150 000 and 300 000 metric tones per year (De Souza, 1988). Fishery experts assert that fish production in Kenya may be increased by exploiting the offshore pelagic fish as well as deep water marine resources more.

## Fishing in Kenya



Most fishing by locals in Kenya is artisanal and there is only little local industrial fishing by prawn trawlers. It is estimated that approximately 80 percent of the total marine products come from shallow coastal waters and reefs, while only 20 percent is from off-shore fishing (Kariuki 2017).

The deep-sea fishery resources are currently only exploited by Distant Waters Fishing Nations (DWFN) through a licensing system.

As observed by Mbaru (2012) a majority (88%) of small-scale fishers (SSF) still use outdated equipment such as basket traps, beach seines, handlines (hook and lines), fence traps, gillnets, seine nets, spear guns and cast nets, and to some extent illegal monofilament nets.

## Fishing in Kenya



The semi-industrial fisheries contribute approximately 10 percent of the total national fishery production. The National total annual fish production is estimated at about 160 000 mt.

Production volumes of marine fisheries declined in the 1990s and recently stabilized at about 9 000 mt valued at Kshs 1.8 billion (equivalent to about USD 18 million).

The decreasing trend is associated with a decline in fish abundance, particularly in the near-shore fishing grounds where most of the artisanal fishers carry out their fishing activities.

## Fishing in Kenya



Artisanal fishing activities are undertaken by more than 10 000 fishers, of which 9 600 are boat fishers using 2 400 boats and 675 are foot fishers.

It is estimated that approximately 80 percent of the total marine products come from shallow coastal waters and reefs, while only 20 percent is from off-shore fishing.

Most small-scale fishers live in communities characterized by poverty and food insecurity.

## UNIT ONE

### Session 2

Overview of Kenya's regulatory framework, environment and the Blue Economy



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### Regulatory framework (some actors)



- **Kenya Marine and Fisheries Research Institute (KMFRRI):** Undertake research in marine and freshwater fisheries, aquaculture, environmental and ecological studies for sustainable exploitation of fisheries and other aquatic resources.
- **Kenya Fisheries Service (KeFS):** Conserve, manage and develop Kenya's fisheries resources.
- **Kenya Fisheries Marketing authority (KFMA):** Market fish and fisheries products from Kenya.





## Regulatory framework

- **Fish Levy Trust Fund (FLTF):** Provide supplementary funding for activities geared towards management, development and capacity building, and for urgent mitigation to ensure sustainability of the fisheries resource in accordance with the Fisheries Management and Development Act (FMDA), 2016.
- **Kenya Fisheries Advisory Council (KFAC):** Review and advise the national government on all matters relating to fisheries resources.
- **Kenya Fishing Industries Corporation (KFIC):** Exploit fishery resources in Kenya's waters and high seas by promoting the establishment, development and efficiency of business engaged in the fishing and fishing related activities.

## UNIT TWO Session 3

The fishing sector.  
Challenges in Kenya





## Sub-sector challenges

- declining fish stocks
- limited domestic capacity for deep-sea fishing
- inadequate infrastructure development
- low investment in the fisheries sector
- low aquaculture development
- low value addition and weak marketing systems
- limited access to credit and insurance
- post-harvest losses



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## Investment areas that require consideration



- Currently most vessels going to sea do not carry ice or flake ice to preserve their fish after they are harvested leading to large amount of post-harvest losses.
- Cold storage needs better management. Ice-making machines must be close to landing beaches for ease of access.
- There is need to add value by processing landed fish. When landed, fish require ice, cold rooms or need to be processed by filleting, sun-drying, deep-frying or smoking. Improved *jikos* and smoking ovens that use less fuel and save on energy are recommended. Solar driers that run on green energy need to be promoted.

## Investment areas that require consideration



- With improved technologies through investments and financing, fishers can avoid selling whole fish and instead sell fillets. Fish fillets cost three times as much as whole fish.
- Other valuable products that fishers can get by filleting fish include e.g. fish skin for gelatins.
- Information on alternate source of livelihood include culture of spirulina for raising fish fingerlings in hatcheries. This is a highly priced product.
- Seaweed culture should be processed to fetch higher prices. Seaweed products include soap, lotions and shampoo.
- Lobster rearing in cages could be another line of revenue that fishers can consider investing in.

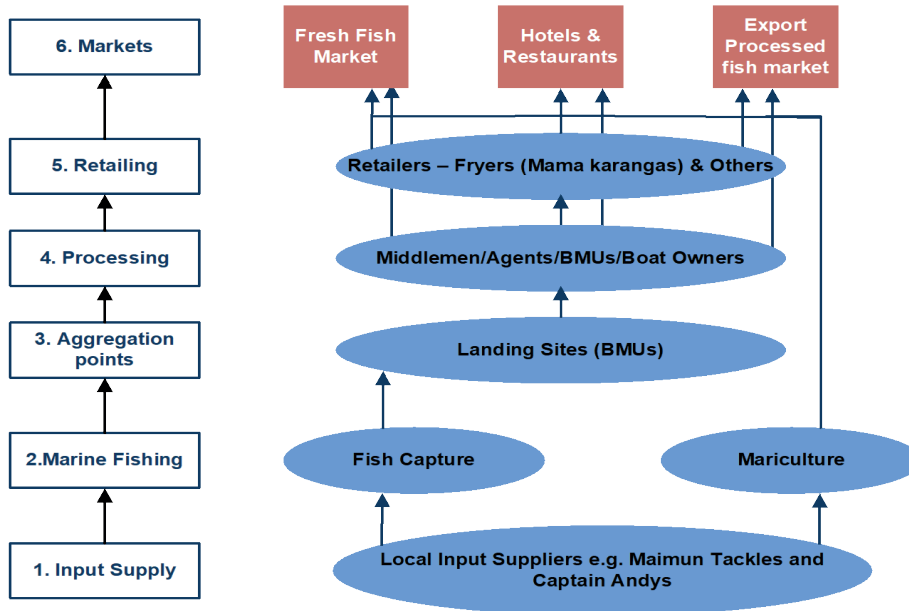
## UNIT FOUR Session 6

### Features of the Kenyan small-scale fisheries (SSF) value chain





## SSF value chain



Source: Author's own elaboration.



## Input supplies for SSF

- The majority of artisanal fishers along the Kenyan coast source their fishing supplies and equipment from two major suppliers namely, Maimun Fishing Tackles Limited through their outlet in Mombasa Island and Captain Andy's Ltd.
- Small-scale fishers seem to prefer Maimun Fishing Tackles due to their pocket friendly price range. In comparison, Captain Andy's offers much more modern and global standard equipment with safety mechanisms and are perceived as an expensive vendor.
- There are also some Beach Management Units (BMUs) which offer boat making services that are seemingly low-cost compared to those available in the market, e.g. Mtwapa BMU. Boats manufactured by BMUs may not meet global safety standards but seem to be preferred by small-scale fishers due to the cost implications.
- A 'low-cost' boat manufactured by the BMU would on average cost around USD 3 000 compared to a similar one of the same size, but professionally manufactured and safer, would fetch up to USD 7 000 or more sold through Captain Andy's.

## Fishing techniques in capture fisheries



- There are over 20 types of gear used in the three project counties.
- The use of prohibited gears along the coast such as beach seines, spear guns and monofilament nets remains prevalent despite being designated as illegal since 2001 (Kenya Gazette Notice No. 7565).
- Beach seines are among the most destructive gears, significantly capturing a high proportion of juveniles and reducing coral cover in areas where they are used.
- Conversely long lines, troll lines and ring nets (small purse seine) are usually operated offshore. Ring nets are particularly productive during the northeast monsoon, with a by-catch of demersal reef fish.

## Beach Management Units What are they?



- For the purposes of ensuring structured community participation, the Fisheries Management and Development Act 2016 established Beach Management Units under section 38.
- **Their objective is to co-manage the fisheries resources with governments, both on national and county level.** They are also mandated to charge fees or manage landing levies for the benefit of their members among other regulatory functions. Beach Management Units registered by the State Department for Fisheries, Aquaculture and the Blue Economy are mandated to manage the fish aggregation points also known as landing sites.



## Beach Management Units

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- The role of BMUs is further detailed in the draft BMU regulations from 2019. BMUs bring together fishers, boat owners, gear owners, fish transporters and fish traders among other persons that participate in the industry. All fishers that are members of the BMUs and pay annual subscription fees.
- A BMU can be a link between the fishers' small organised and registered group and the financial service provider (FSP).
- With their facilitation, FSPs may provide financial literacy to the fishers on the need to save and the value of accessing credit.



## Gender issues in small-scale fisheries

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- Fishing along the coast is male dominated, the participation of women is focussed mainly on the secondary and tertiary levels of the value chain.
- Along the Kenyan Coast, women are mainly involved in fish processing (commonly known as '*Mama Karangas*') and trade.
- The fish are fried, roasted, sun dried or boiled.



© AFRACA

*Mama Karangas*



## Gender issues in small-scale fisheries

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- Mama Karangas co-exist with male fish traders who tend to target higher value species and not engage in processing.
- Fish traders compete to buy different fish e.g. octopus, squid and lobsters. Some traders specialize in one type while others purchase a variety of fish.
- *Mama karangas* prefer to trade directly with fishermen at the beach rather than at the market in order to secure better prices and fresher fish.
- Each of the mama karangas source their fish from specific fishermen to avoid conflict amongst them.
- During the low season they source fish from the local butcheries.
- They also reach the fishermen by phone, though some fishers have none.
- They tend to arrive at a site several hours before the fishermen are due, sometimes selling snacks or collecting firewood while they wait.



## Gender issues in small-scale fisheries

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- Despite the gender imbalance, mama karangas provide a vital link between the fishers and poorer fish consumers, their target market.
- Many mama karangas are single mothers who exclusively rely on the trade as their sole source of income.
- The ages vary from youth to elderly ladies.
- Instances where spouses have prevailed to make the mama karangas exit the trade have been documented.
- Some women traders have ventured into collective business to benefit on economies of scale and to create employment for themselves and other women.
- The “sex for fish” practice is a menace that has continued to prevail albeit the efforts to curb it through advocacy activities.
- Generally, mama karangas do not keep any records of their businesses and many of them manage only little savings due to other household demands.
- During low season, they financially support the fishermen based on their need for subsistence.

**Module 2 : Role of financial service providers in promoting innovation and investment in the small-scale fishing sector in Kenya**



**UNIT ONE**  
**Session 1**

Existing models for provision of microfinance services  
and capacity building to SSF in Kenya



## Existing models for provision of microfinance services and capacity building to SSF in Kenya



### IMARIKA Sacco – Mtaji Loan

Imarika Sacco (saving and credit cooperative) formerly known as Kilifi Teachers Sacco is one of the leading Saccos in the coastal region.

Through its headquarters in Kilifi town, it also serves the other two counties targeted by the project (Mombasa and Kwale) where it has a significant footprint.

Imarika Sacco has a specific loan product called 'Mtaji Loan' that targets small-scale fishers. The loan features an interest rate of 1% per month on reducing balance and follows a group borrower logic.

Borrowers can access funds between Ksh 5 000 – 500 000 (between about USD 40 and USD 4 000).

## Existing models for provision of microfinance services and capacity building to SSF in Kenya



### IMARIKA SACCO – Mtaji Loan

The Loan is available to BMU members if they can co-guarantee each other.

Since its launch, however, the loan product has been poorly patronized by small-scale fishers.

Saccos engage only with members who save with them. The poor savings culture among the SSF has a direct correlation with the low uptake. Thus, the need for financial literacy for SSF is critical and Imarika would be willing to offer training services.

*(AFRACA -FAO Validation Workshop 2021)*

## Existing models for provision of microfinance services and capacity building to SSF in Kenya



### Kenya Women Microfinance Bank – micro asset and agribusiness loan facility

The Kenya Women Microfinance Bank (KWMB) has a portfolio that serves different value chains including, horticulture, dairy, aquaculture, beekeeping and poultry farming. Under the bank's aquaculture product, the focus is mainly on fish farming.

The financing enables clients to acquire the necessary infrastructure for construction of fishponds, pond fertilization, fingerlings and fish feed.

Financing of boats and fishing gear are also viable under the micro asset financing product. The model used in acquisition of assets is through a sales agreement (tripartite agreement) where the borrower will identify the appropriate vendor and agree with the FSP on the cost of the boat and gears.

## Existing models for provision of microfinance services and capacity building to SSF in Kenya



### Kenya Women Microfinance Bank – micro asset and agribusiness loan facility

The micro asset loan is not only limited to boats and gears but can also apply to other fishing equipment required by SSF such as cooler boxes, generators, boat engines as well as motorcycles to aid in transportation of fish.

Before lending is done, the bank conducts financial literacy training which runs for 8 weeks. During this period, the bank conducts regular weekly meetings, where aspects of financial management e.g. record keeping, savings, financial discipline and management of bank accounts are discussed.

Despite the availability of the various financing options offered by the bank, SSF stakeholders are yet to access credit from the bank in larger volumes.

*(AFRACA -FAO Validation Workshop 2021)*

## Existing models for provision of microfinance services and capacity building to SSF in Kenya



### Kenya Women Microfinance Bank – micro asset and agribusiness loan facility

Recently in 2019, there has been collaborative efforts between public sector institutions and financial institutions to promote innovation in the SSF sector through a concessionary long-term financing arrangement.

A public private partnership between the county government of Mombasa and KCB Foundation procured semi-industrial boats (two for each county of Kwale, Kilifi and Mombasa) to be managed by selected BMUs.

Since the boats were procured and commissioned in 2019, the BMUs have not been able to put them in full commercial use. Hence, the Ksh. 15 million (about USD 120 000) loan has remained unserviced. A main reason for the problems of this intervention has been insufficient coordination between the key stakeholders.

## Existing models for provision of microfinance services and capacity building to SSF in Kenya



### Kilifi County Micro Finance Fund (Mbegu Fund)

The Mbegu Fund Initiative was launched to advance interest-free loans to groups, enterprises and cooperatives in Kilifi County to facilitate their growth.

The Kilifi county government has set aside 70 million Ksh (about USD 590 000) for the Mbegu Fund that targets youth and women groups who are seeking to engage in entrepreneurial projects in the region.

The Mbegu fund envisages to enable young entrepreneurs in the county to access cheap startup capital that will help them in setting up businesses.

In line with the new Kilifi microfinance bill, over three hundred groups of women and youths have benefited from loans offered by the county government of Kilifi via the Mbegu Fund.

## UNIT ONE

### Session 2

Challenges in credit delivery to SSF (demand and supply side challenges)



Locally fabricated fibre glass boat

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### Demand side challenges



- Unbanked value chain actors with no credit history
- Weak group organization (lack of formalized entities to access credit)
- Poor savings culture among fisherfolk
- Negative attitude towards banks and commercial loans
- Business mindset needs to be developed
- Low literacy levels among fishers and poor financial management skills/practices both at BMU and fishers' level
- Poor fish handling practices leading to fish spoilage and waste
- Weak understanding of fish markets and pricing

## Demand side challenges



- Lack of markets (market segmentation)
- Poor storage (some fish can be stored longer than others)
- Harsh climatic conditions in some seasons
- Generally low prices for fish
- Low value addition in the value chain
- Presentation of marine products (e.g. crabs can fetch more market when sold without the shells)
- Poor development of fingerlings for mariculture
- Fishers fear going into deep seas (even if some communities are adapted deep sea fishing)

## Supply side challenges



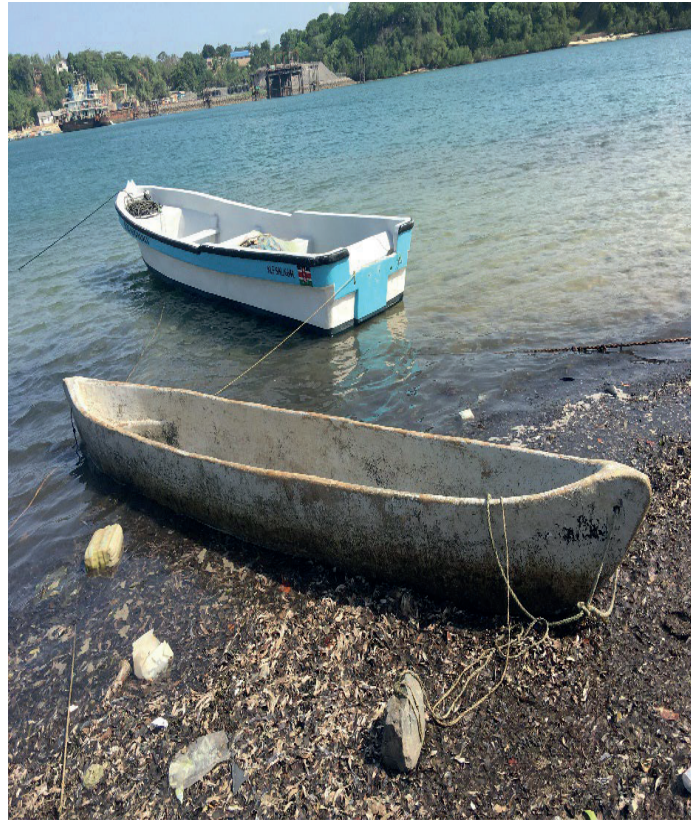
- High cost of serving SSF and high interest rates
- Stringent demand for collateral
- Perception that SSF are not credit worthy due to their dependency on grants and public funding
- Mismatch in desired loan tenors between lenders and fishers
- Limited technical capacity of FSPs to properly appraise SSF
- Low appetite by SSF for insurance
- High non-performing loan rates in the past
- Migratory fishing habits of small-scale fishers making it difficult to track them when it comes to loan follow-ups

*(AFRACA -FAO Validation Workshop 2021)*

## UNIT ONE

### Session 3

Opportunities in  
credit delivery to SSF



A wooden dugout canoe and a fibre glass boat

© AFRACA

## Opportunities in credit delivery



### Key findings from AFRACA-FAO survey 2021

- The branch network for financial service providers located at the Kenyan coast is generally good, providing an opportunity of outreach for credit services.
- There are no defined products for the sector, but rather general agriculture products, the majority of which can serve the SSF sector.
- Penetration of digital services is exemplary with most of FSPs offering mobile money services and most fishers are accustomed to using them.

*(AFRACA - FAO Validation Workshop 2021)*

## Opportunities In Credit Delivery



### Key findings from AFRACA-FAO Survey 2021

- Sometimes, loans from formal FSPs are insured, hence limiting the risk on the providers in managing non-performing loans. Some of the FSP have in-house insurance agencies e.g. KCB Bank, KWMB and Equity Bank. Those who may not offer such services out-source them, as is the case with Imarika Sacco who is served by KUSCCO.
- Group lending models are widely practiced among microfinance institutions along the coast. Fishers therefore can be organised into common interest groups through which they can access such facilities.
- Coastal women in fisheries are more cohesive and form the majority of common-interest groups along the SSF value chain. They have a much stronger savings culture through informal saving groups e.g. merry-go-rounds, VSLAs (Village Savings and Loan Association) etc. this gives them a financial advantage over their male counterparts.

*(AFRACA - FAO Validation Workshop 2021)*

## UNIT ONE Session 4

Credit assessment of SSF



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## Credit assessment and risk mitigation



	Potential Credit Risks in SSF	Risk Mitigation measures
1	Lack of training on safety at sea	Form partnerships with established vendors to package asset finance with technical expertise e.g. Captain Andy's
2	Lack of personal insurance covers	Bundling of credit with insurance
3	Multiple ownership of fishing vessels and gears; Most of the vessels and even gears used by small scale fishers are not owned by them; they are crew members	Financiers to ensure vessels and gears are insured
4	Poor savings culture despite majority making modest incomes	Offer savings products to SSF e.g., SACCO model
5	Low financial literacy levels	Adopt a microfinance approach



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**Module 3 : Wrap up, key recommendations on financing innovation in SSF**



## Key recommendations

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1. **Crowding-in the private sector:** For a sector highly dependent on public resources, the government might try and crowd-in more private sector players, specifically financial service providers, to invest and provide complementary support towards the overall development of the fisheries sector. Financial sector players could be incentivized to participate in the sector through a number of ways:
  - a) Providing concessionary funding and other low-cost financing instruments, such as guarantees to financial institutions.
  - b) Working closely with financial institutions in management of public funds earmarked for the fisheries sector with the aim of boosting the capital base of beneficiary banks and ensuring the fishing sector benefits from such funds.
  - c) Public encouragement to FSPs to support the sector as part of their corporate responsibility interventions.
  - d) Encouraging more research and studies by private, development partners and non-state actors in fisheries that present the business case to attract financial service providers and other investors.

## Key recommendations

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2. **Linkages between FSPs and BMUs** should be promoted for FSPs to better understand the operating circumstances of artisanal fishers. This will facilitate the design of appropriate credit products and financing arrangements that will help fishers' growth and their transition to semi-industrial fishers.
3. **Embed insurance uptake in the sector** by encouraging insurance operators and development actors to partner with financial institutions in designing financial products that will support artisanal fishers from transitioning from artisanal fisheries to semi-industrial fishing. Insurance and loan products can complement each other. Smart subsidies by government in insurance services provision can be catalytic.
4. **Government and BMUs should encourage the formation, integration and strengthening of cooperatives** to inject an entrepreneurial spirit among artisanal fishers and promote a savings culture.

To make small-scale fisheries in Kenya more sustainable, fishers need to invest in responsible fishing operations and technologies, reduce overfishing, contribute to fisheries management, and implement climate change adaptation measures. Small-scale fishers often do not have access to financial services to innovate and to make the necessary transition to sustainable fishing operations. Access to financial services will help them to innovate and adopt measures that will provide social, economic and environmental returns, the desired triple bottom line.

The African Rural and Agricultural Credit Association (AFRACA) and FAO, in collaboration with the State Department for Fisheries, Aquaculture and the Blue Economy in Kenya, implemented a project to analyse and improve the access of small-scale fishers to financial services in Kenya.

The project identified the key finance- and fisheries sector stakeholders, carried out surveys and interviews, and conducted a techno-economic performance analysis of some small-scale fishing fleets, to investigate the potential innovations for investment. A two-day stakeholder workshop was held in 2021, in which the participants agreed to constitute a CAFI-SSF Network Kenyan Chapter. AFRACA developed and tested training materials on lending to the fisheries sector for financial service providers. This circular provides a summary of the project achievements.

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