



Study of fisheries and aquaculture  
value chains in Mozambique

# How to reduce gender discrimination in the fisheries and aquaculture sectors



Foto: Bodil Maal

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**Fact-finding mission**

Study of fisheries and aquaculture  
value chains in Mozambique

How to reduce gender Discrimination  
in the fisheries and aquaculture sectors

April 2014

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## Acronyms

CCP	Conselho Comunitário de Pesca (Community Fisheries Council).
CEPAQ	Centro de Pesquisa em Aquacultura (also known as the Mapapa Chokwé Centre)
EU-IFAD	European Union-International Fund for Agricultural Development
FNI	Fundo Nacional de Investigação (National Fund for Investigations)
ICEIDA	Icelandic International Development Agency
IDPPE	Instituto Nacional de Desenvolvimento da Pesca de Pequena Escala (Institute for the Development of Small Scale Fisheries)
INAQUA	Instituto Nacional de Desenvolvimento da Aquacultura (National Institute for Aquaculture Development)
ISPG	Instituto Superior Politecnico de Gaza (High Polytechnic Institute of Gaza)
LOLE	Lei dos Órgãos Locais do Estado
Norad	Norwegian Agency for Development Cooperation
PAMP	Plano de Acção para Massificação da Piscicultura (Plan of expansion of small-scale aquaculture)
PCR	Grupo de Poupança e Crédito Rotativo (Savings and credit group)
PESPA	Strategic Plan for the Artisanal Fisheries Sub-Sector
SDAE	Serviços Distritais de Actividades Económicas (District Services of Economic Activities)

## Executive summary

A fact-finding mission about the role women play in fisheries and aquaculture in Mozambique was conducted between January 28 and February 14, 2014. The mission's objective was to document the participation of women in two value chains: The small-scale capture fisheries value chain and the aquaculture value chain. A **value chain** is defined as the full range of activities that businesses go through to bring a product, in our case the fish, to the customers. Our task was to identify entry points for improving the work condition and creating equal access to resources and opportunities for women in the two value chains. We studied the two value-chains in Gaza Province.

The capture fisheries value chain is well established. Male fishers are typically involved in the production of the commodity (resource management and catch), and women are predominantly engaged in trading activities. The social organisation of women traders is very weak. Women are under-represented in local fisheries management committees and credit and savings groups. This largely constrains their access to fish preservation equipment (e.g. cool boxes). The lack of such equipment makes it difficult to distribute fish to remote rural areas.

The aquaculture value chain, on the other hand, does not include post-harvest traders and operations. In most cases, fish produced is sold at the pond by the aquaculture producers to the local villagers. Aquaculture producers operate either individually or through associations of producers. These associations have been established to facilitate the dissemination of aquaculture know-how. In contrast to the capture fisheries sector, women dominate aquaculture production. This is a result of specific targeting of women by the government extension officers. Lack of feed and fingerling supply currently constrains the development of aquaculture. The capacity of the aquaculture administration at provincial level is also currently inadequate to satisfy the information and support needs of new producers.

The mission identified the following areas as possible entry points towards the further involvement and improvements for women engaged in the small scale capture fisheries sector and the aquaculture sector:

### *In the aquaculture value chain:*

- Nursing of tilapia fry for the production of fingerling in individual small production units.
- Preparation of fish feed and/or pond fertilizer in individual small production units.
- Improving access to funds and credit.
- Development of a "mentoring" role for experienced fish farmers towards newcomers in the sector.-.
- Recognise officially the aquaculture producers' associations.
- Development of post-harvest activities and networks (trading and distribution of fish).

### *In the capture fisheries value chain:*

- Improve the organisation of women fish traders.
- Increase the participation of women in credit and savings groups.
- Advertise and promote the benefits of fish consumption.

*Regarding both the capture fisheries and aquaculture:*

- Create an inter-institutional “platform” to strengthen knowledge sharing and coordinated actions in the capture and aquaculture sectors.

The interventions mentioned above aim to address identified bottlenecks in value chain of the capture fisheries sector and the aquaculture sector. In addition, the interventions address shortcomings women have in becoming key agents in the production and distribution of quality fish. The interventions will however require discussion and further development by the Ministry of Fisheries and its decentralised administrations if they are retained as part of a pilot project to be funded under the cooperation agreement between the governments of Norway, Iceland and Mozambique. The design and coordination of the pilot project should be located in one province. This will contribute to enhance a more rapid implementation of activities.

The Ministry of Fisheries has shown its commitment to gender equality and women’s empowerment. In addition to enhancing the conditions of women in fisheries and aquaculture at field level, it is anticipated that the proposed interventions will also support the implementation of the Ministry of Fisheries’ new Gender Strategy and strengthen the role and capacities of its Gender focal points at provincial level.

## 1. Background and objective of the mission

Poverty and food insecurity are still prevalent in Mozambique. Over the last 30 years, Mozambique has changed its development priorities for the fishery sector from assisting the industrial sector to focussing on small-scale fisheries and the fishing communities. Fish production for domestic markets, from small-scale capture fisheries and small-scale aquaculture were at the core of this mission. Semi-industrial, industrial and recreational fisheries, as well as large-scale commercial aquaculture production and the value chains of their products will not be discussed in this report.

### 1.1 Context

#### **Cooperation between the Governments of Mozambique, Norway and Iceland**

The fact-finding mission on women in fisheries/aquaculture in Mozambique took place between the 28<sup>th</sup> of January and 14<sup>th</sup> February 2014. It was commissioned by Norad on behalf of the Royal Embassy for Norway in Maputo and the Country Representation of ICEIDA, under the current cooperation framework between the Governments of Mozambique, Norway and Iceland on fisheries and aquaculture. The strong focus on food security and poverty alleviation in the coastal communities is in line with the priorities of Mozambique, Norway and Iceland <sup>1</sup> and the Norwegian Ministry of Foreign Affairs' Strategy for "Food Security in a Climate Perspective" (2013-2015).

In this context, the goal of the mission was to support the Governments of Mozambique, Norway and Iceland in their joint efforts to support the participation of women as economic actors in fisheries and aquaculture and to ensure that they fully benefit from the development of these sectors in Mozambique.

#### **Gender strategy of the Ministry of Fisheries**

The Ministry of Fisheries recently supported the elaboration process of a Gender Strategy, accompanied by an action plan for the period 2013-2017<sup>2</sup>. This overarching strategy concerns both the capture and aquaculture sectors. Whilst being framed by the large developmental goals of the country (e.g. Action Plan for Poverty Reduction 2010-2014<sup>3</sup>, Millennium Development Goals and Fisheries Master Plan 2010-2019<sup>4</sup>), it also builds on past efforts towards gender equality in small-scale fisheries<sup>5</sup>. The objective of the Gender Strategy is to ensure that men and women in the fisheries and aquaculture sector benefit from equal rights and opportunities. Once finalised, the Ministry of Fisheries will formally endorse the Strategy. More support will however be required towards its full implementation, and towards the assessment of its impacts on the lives of men and women engaging in fishing and aquaculture<sup>6</sup>.

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<sup>1</sup> Assistance to the Fisheries Sector of Mozambique Co-financed by Norway and Iceland – appraisal document August 2013.

<sup>2</sup> *Estratégia de Género e respectivo Plano de Acção do Sector das Pescas 2013-2017*.

<sup>3</sup> Plano de Acção para a Redução da Pobreza 2010-2014 (PARPA).

<sup>4</sup> Plano Director de Pescas 2010-2019 (PDP).

<sup>5</sup> The small-scale fisheries sector had its own gender strategy (*Estratégia de Género para o Subsector da Pesca Artesanal 2009-2013*), which is now superseded by the central-level gender strategy of the Ministry of Fisheries.

<sup>6</sup> In many respects, the current mission, and its outcome (i.e. the pilot project – see Section 3) can be considered as forming part of the implementation of the Ministry of Fisheries' Gender Strategy. Further thoughts on this matter are provided in Section 4.

In order to mainstream gender in its work and policies, and as a step towards the implementation of its Gender Strategy, the Ministry of Fisheries has nominated a Gender focal point at central level. The Gender focal point at central level is also Adviser to the Minister of Fisheries – a sign in itself of the importance given to gender by the Government of Mozambique. IDPPE has also nominated a number of other Gender focal points who are operating at provincial levels. INAQUA does not appear to have followed this approach to mainstream gender in the development of aquaculture. INAQUA's plan for the “*massificação*” of small-scale aquaculture<sup>7</sup> is not explicitly gender-sensitive (for example, the plan does not specifically consider women's needs, nor gender equality). However, it can be considered that this plan is framed by the contents of the Ministry of Fisheries' Gender strategy. In practice, INAQUA's current collaboration with agricultural extension officers of the SDAE at district level, who target preferentially poorer women for the establishment of groups and associations, helps to ensure that women are a prime target in their activities. More however is required to monitor the benefits they draw from their involvement, but INAQUA's capacity in this regard is limited.

Lessons learnt from experiences in gender mainstreaming have shown that there is a need for staff with special responsibility to follow-up on government's intentions. However, to be effective, gender focal points need to have both a clear mandate and relevant competences in order to ensure that general policy directions and interventions are gender-sensitive. This appears not to be quite the case.

### **Key partners in fisheries and aquaculture**

At central level, the Ministry of Fisheries, IDPPE and INAQUA are responsible for promoting and overseeing the implementation of national development strategies and plans regarding small-scale fisheries and aquaculture respectively. Thus, IDPPE oversees the implementation of the PESPA - Strategic Plan for the Artisanal Fisheries Sub-Sector 2006-2015, whilst INAQUA oversees the Action Plan for the Expansion of Small-Scale Aquaculture 2012-2014<sup>8</sup>. In addition, IDPPE is responsible for the implementation of a number of donor-funded small-scale fisheries development projects such as the countrywide EU-IFAD ProPESCA project (2011-2018). INAQUA, on the other hand, is to implement the new EU-IFAD ProAQUA project (2013-2016), designed to improve the livelihoods and food security of poor households involved in fish farming in several districts of the Manica and Sofala Provinces.

At provincial level, under the Local Government Act<sup>9</sup>, INAQUA and IDPPE work through the Provincial Fisheries Directorates, and, at district level, in collaboration with the SDAE regarding aquaculture extension and the formation of producers' and credit/saving groups and associations. Although INAQUA has delegations in four provinces, it has only one Representative in Gaza Province. This is however soon to change with the opening of a delegation and recruitment of approximately 9-10 aquaculture technicians in this Province by the end of 2014. The “*massificação*” of aquaculture is carried out through a process of demonstration-replication, where individuals or groups of farmers interested in aquaculture – mostly women – receive support to dig a “demonstration pond” and basic

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<sup>7</sup> Plano de Acção para Massificação da Piscicultura (PAMP 2012-2014).

<sup>8</sup> See footnote 7.

<sup>9</sup> Lei dos Órgãos Locais do Estado (LOLE).

training on fish farming. Once confident enough, they are then encouraged to open their own “replica ponds” and manage them individually.

### **Challenges**

Small-scale capture fisheries are relatively well served by IDPPE and its experience in capacity building. IDPPE organises saving and credit groups and community fisheries councils at community level. Large-scale, donor-funded interventions have also contributed to improving fish value chains and the living conditions of fishers and their households over the years. Aquaculture, on the other hand is a newer activity. The two main technical challenges to its development are the low availability of fingerlings and fish feed. They will be discussed in greater depth in the next section. In terms of support, the most important challenge faced by INAQUA, an institution created only five years ago, is its very limited capacity at Provincial levels, both in terms of personnel (only one aquaculture technician for the Gaza Province), and logistical means (no transport is provided to cover an area the size of Ireland). Close cooperation with agricultural extensionists from the SDAE who can visit rural areas more regularly as part of their routine extension activities, and who are receiving basic training from INAQUA on aquaculture, makes it possible to patch up the support provided to those engaging in aquaculture (mainly advice on the construction of new ponds). The SDAE also supports INAQUA with their expertise in the formation of groups and associations of aquaculturists, which INAQUA can then target for production.

The wide availability of *carapau* (imported mackerel from Angola) is another challenge to the development and attractiveness of the culture of fish. *Carapau* can be found, in frozen form, even in remote inland rural areas. Although this species transits from landing/import sites to consumers through a different chain than other capture fish products, it is cheap and commonly eaten by all strata of society, in particular the poor. It is likely to compete with farmed fish because it is very cheap, even if overall demand for fish is high. For people with low income and lacking a culture of eating 'good quality' fish, it will be the preferred option.

Notwithstanding these challenges, aquaculture also offers a window of opportunity for women. As a new activity, it is not as strongly associated with the same gender constructions as those typically encountered in capture fisheries (i.e. men in production/capture, women in post-harvest activities). This is further supported by the perception, by women, that fish farming is an extension of the farming of their *machamba* (household's land plot). As such, aquaculture might strengthen the role of women as economic actors within the fisheries sector. These aspects are investigated in greater depth in subsequent sections of the report.

### **Development context in Gaza Province**

Gaza is one of the least developed provinces of Mozambique. Comparative human development statistics for all provinces of Mozambique are provided in Appendix 2.

The Gaza Province population prognosis for 2012 was 1.3-1.4 million inhabitants. The province covers 75 000 square kilometres and is divided into 12 districts. The fact-finding

mission visited the districts of Bilene (164,000 inhabitants), Chibuto (207,200), Chókwé (197,000) and Xai Xai (209,000)<sup>10</sup>.

According to statistics from 2010, 61 percent of the population in Gaza face chronic and acute food insecurity<sup>11</sup>, making Gaza the second province with the highest percentage of inhabitants with food insecurity in Mozambique. In Gaza, of children below five years old, 34 percent are stunted and 6.8 percent are underweight. The artisanal fisheries do not provide the fisher communities with satisfactory living conditions. In fishing communities, there are pockets of poverty and poor food security. Fish is a key protein component (27%) of the Mozambican food basket, and in many cases the only accessible source of protein for the poor. Rising imports show that domestic supply is not meeting demand

The southern coast of Mozambique consists of sand dunes and tourism is important. This part of the coast has fewer artisanal fishers, and more fish traders.<sup>12</sup>.

Another characteristic of the province is its high number of female-headed households. In 2009, as many as 53 percent of the households were female-headed<sup>13</sup>.

Migration to South Africa is an important phenomenon, reinforced by the close cultural links of kinship, cooperation, and chains of migration between the provinces of Limpopo and Mpumalanga in South Africa and Gaza in Mozambique<sup>14</sup>. Eighty to ninety percent of the migrants are men, often from larger households. Close to 10 percent of the male migrants are from polygamist households and have 2-3 wives. The remittances from Gaza migrant workers in South Africa are used for investing in housing, but also for family businesses, such as buying fishing-boats and building market *barracas*<sup>15</sup> (shops or stalls in cement that line the market street).

## 1.2 Objectives of the mission

The fact-finding mission's objectives were to:

1. Identify entry points for improving the work condition and economic situation of women in the value chains of selected fisheries and aquaculture species.
2. Provide suggestions and inputs on the tackling of gender issues in the new plan of cooperation between Norway, Iceland and Mozambique (i.e. the "Common Fund" programme in support of the fisheries and aquaculture sectors of Mozambique for the period 2013-2017).

It is anticipated that the suggestions provided in this report will serve as a basis for the elaboration of a pilot project to enhance the involvement, conditions and benefits of women in communities dependent on small-scale fishing and aquaculture through fish

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<sup>10</sup> <http://www.geohive.com/cntry/mozambique.aspx>

<sup>11</sup> IFAD, 2013

<sup>12</sup> Norway-Iceland, 2012

<sup>13</sup> Tvedten et al., 2009

<sup>14</sup> The Global Commission on International Migration (2005) estimated that South Africa had 500 000 undocumented migrants, probably half of whom are illegal (on the basis of SAMP's 2003 figures) – quoted from Muanomoha, 2008.

<sup>15</sup> De Vletter, 2006

value chain related activities in Gaza Province. This pilot project and its implementation will constitute Output E.2.2 of the Common Fund programme.

The mission focused on Gaza Province for its accessibility and stronger emphasis on small-scale aquaculture development<sup>16</sup>. Other provinces are already hosting important donor-funded initiatives on small-scale fisheries (e.g. past Sofala Fisheries project, current ProPESCA project) and on aquaculture (ProAqua project).

### **1.3 Organisation and methodological approach of the mission**

The mission comprised of two phases: institutional and field information collection. We met key actors of the capture and aquaculture value chains – men and/or women from fishers, traders, fish farmers, CCPs and PCR groups and interviewed them in coastal and inland communities of Gaza Province. In Appendix 1, we describe the organisation and methodology used by the mission in detail. In Appendix 3, we provide the fieldtrip itinerary, agenda for the overall mission and list of institutional stakeholders that we met. The narratives from the interviews and meetings held and which enabled us to understand the value chains and the role of women in these, as well as identify gaps and disadvantaged groups, are provided in Appendix 4.

## **2. Participation of women in fisheries and aquaculture chains in Gaza Province and entry points for support**

### **2.1 Overview of value chains for capture and aquaculture products**

Value chains for capture and farmed fish products in Gaza Province are laid out in Figure 1 and Figure 2.

These value chains show how fish move forward in the case of capture, and from a fingerling state in the case of aquaculture, to being consumed. Using recognized value chain nomenclature, actions involved, operators and supporters of the chain are indicated under each stage of the chain (basic functions). The participation of men and women in production and post-harvest activities is symbolized in both figures.

At present, capture and aquaculture value chains are separate and do not meet at any point<sup>17</sup>. Marine fish and freshwater value chains<sup>18</sup> are also separate: they mirror one another and involve similar actors who are different people. Marine fish and freshwater value chains can however meet in post-harvest stages if catches come from closely located freshwater bodies and coastal waters (e.g. of Xai-Xai street sellers selling both freshwater and marine species due to the vicinity of the Limpopo River mouth and the open sea). The

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<sup>16</sup> Gaza Province will host the INAQUA Chókwé Mapapa fingerling production and training centre (*Centro de Pesquisa em Aquacultura – CEPAQ*), currently under construction and planned for opening in spring 2015.

<sup>17</sup> It is not impossible however, that the two value chains *could* meet at one point in the future *if* spoilt captured fish, which is currently wasted during post-harvest trading in inland areas (see Section 2.3.1) was pounded and used as a fishmeal supplement in fish feeds.

<sup>18</sup> Not graphically represented.

post-harvest trading of freshwater fish is overall less formally organised and more ad-hoc than that of marine fish.

In the case of marine capture, fishers are typically involved in the resource management and catch, and women predominantly in trading activities. In the areas visited, fish tends to be traded and sold fresh or frozen – there is little transformation through drying or salting, though the latter can be encountered in some locations of the Province. This means that marine fish does not travel far inland to rural villages. The bulk of the catch (90%)<sup>19</sup> is transported to Maputo by car, with little left to supply urban markets (e.g. Xai-Xai), and even less for rural villages. Through the formation of CCP<sup>20</sup> and PCR groups to respectively manage the local fishery and encourage savings and credit at community level, IDPPE is the main governmental supporter of the chain. A more detailed description of the different stages of the capture value chain is provided in the fieldwork narratives in Appendix 3.



**Photo 1:** Freshwater fish (tilapia) seller, Chidenguele, Gaza Province. Fish are sold by the stick by individual sellers walking around villages.

In the case of aquaculture, the value chain is shorter. At present, volumes produced are too small to justify an established post-harvest chain of intermediaries. All the production tends to be sold fresh either by the pond or to local village inhabitants. Aquaculture producers operate either individually (e.g. semi-intensive cage production, extensive pond production), or through an association (extensive production)<sup>21</sup>. INAQUA supplies producers with subsidized fingerlings (including transport to production sites)<sup>22</sup>, and provides technical support. To compensate for the limited availability of aquaculture extension officers in the Province<sup>23</sup>, INAQUA has trained SDAE agriculture extensionists on aquaculture matters. These provide advice and technical support to pond operators whenever they are in the area to provide agricultural extension advice. The availability of fish feed is the most serious bottleneck in the aquaculture value chain. Feed practices currently include either importing feed from South Africa at great expense for more intensive operations (e.g. cage culture), or fertilisation with ad-hoc supply of on-farm

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<sup>19</sup> Source: Fernando Momade, Director, Provincial Directorate of Fisheries, Gaza (Direcção Provincial das Pescas de Gaza)

<sup>20</sup> CCPs only deal with marine capture fisheries management.

<sup>21</sup> INAQUA's aquaculture expansion strategy is based on first, a demonstration phase using ponds, managed either individually or collectively through an association, to show and teach the basics of fish farming. This is followed by a 'replica' phase, where association members are encouraged to dig their own 'replica' ponds with the know-how acquired, either remaining within the association or leaving it.

<sup>22</sup> As part of INAQUA's aquaculture expansion strategy, two cycles of fingerlings are provided free of charge (including transport) to aquaculturists, regardless of the intensity of their operation.

<sup>23</sup> Only one INAQUA aquaculture technician is available to cover the entire Gaza Province. Despite his motivation, the lack of logistical support seriously hampers the effectiveness of his work.

resources (e.g. rice husk, pounded cassava leaves). INAQUA is currently working on developing and testing a feed formula based on locally available agricultural by-products.

In terms of male and female participation, there are significant differences between the capture and aquaculture value chains. In the capture value chain, women are mostly involved in post-harvest activities, except for a few boat owners who do not directly engage in fishing. Conversely, in the aquaculture value chain, a higher number of women are involved in fish farming, either independently or through their membership of associations. This may be due to their targeting by INAQUA<sup>24</sup>, but perhaps more importantly to the fact that looking after a fish pond is perceived by women as an extension of their responsibility for cultivating the *machamba*. It is convenient for them since the ponds are located in the same place as their farm activities, and in some cases where they breed livestock like chickens.

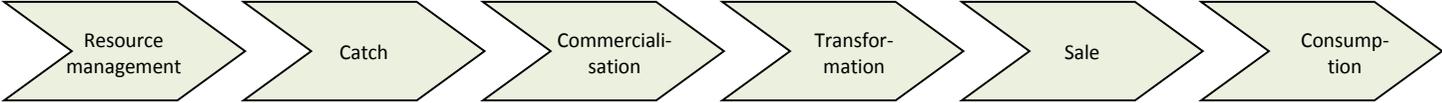
The flow of information and relationships between value chain actors and supporters are explored in greater depth in Sections 2.3 and 2.4.

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<sup>24</sup> When a new location for new ponds is decided, INAQUA works with the concerned community leader who is a very influential person and will persuade some members of his constituency to partake. Interested people and those willing to join the new initiative tend to be predominantly women who are more readily willing to integrate aquaculture in their daily agricultural activities. Land ownership is usually not a problem for the women carrying out aquaculture as part of an association as the community leader will allocate communal land to the association for this purpose.

**Figure 1: Generic value chain for marine capture fisheries products.**

**Basic functions**



**Roles**

Deciding Managing Informing	Fishing Landing	Sorting fish Negotiating prices Transporting fish Freezing fish	Freezing Transporting	Negotiating	Cooking Eating
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**Operators**

CCP (fishers) ♀♂♂♂	Fishers ♂♂♂♂ (boat owners, crew members)	Traders: up-market products (car) ♂♂♂♂	Hotels	
		Traders: market-based ♀♀♀♀		Households (urban)
		Traders: street-based ♀♀♀♀		Households (rural)

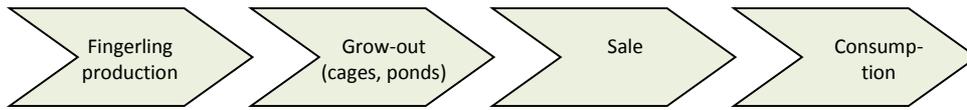
**Chain supporters**

CCP ♀♂♂♂	PCR ♀♂♂♂	PCR ♀♀♀♂
IDPPE	IDPPE	
	Net suppliers	
	Carpenters-boatbuilders	

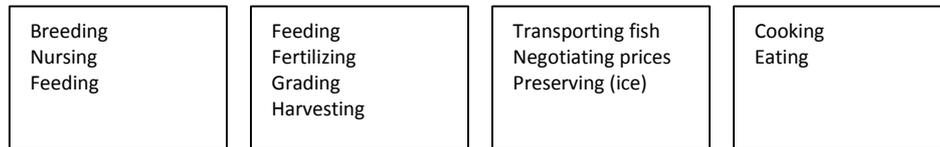
CCP: Conselho Comunitário de Pesca (Community Fisheries Council). PCR: Grupo de Poupança e Crédito Rotativo (Savings and credit group). IDPPE (Instituto Nacional de Desenvolvimento da Pesca de Pequena Escala (Institute for the Development of Small Scale Fisheries) ♀(woman) ♂ (man) representing the relative proportion of women and men in activities and groups.

**Figure 2: Generic value chain for aquaculture products.**

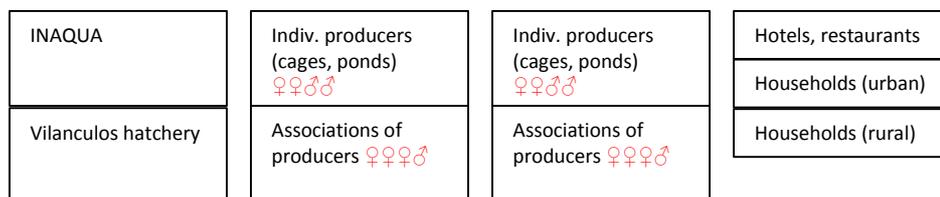
**Basic functions**



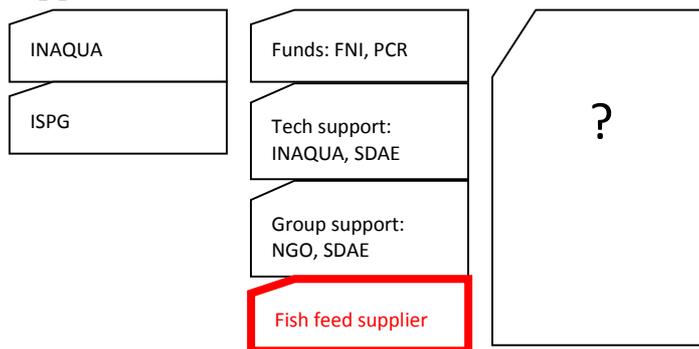
**Roles**



**Operators**



**Chain supporters**



INAQUA: Instituto Nacional de Desenvolvimento da Aquicultura (National Institute for Aquaculture Development).  
 ISPG: Instituto Superior Politecnico de Gaza (High Polytechnic Institute of Gaza).  
 FNI: Fundo Nacional de Investigaçao (National Fund for Investigations).  
 PCR: Grupo de Poupança e Crédito Rotativo (Savings and credit group).  
 SDAE: Serviços Distritais de Atividades Económicas (District Services of Economic Activities)  
 ♀(woman) ♂ (man) representing the relative proportion of women and men in activities and groups.  
 Red box outline: main value chain bottleneck.

**2.2 Women’s agency in fisheries and aquaculture value chains**

What did we learn about the nature and magnitude of the social, economic, cultural and institutional barriers and opportunities for women in fisheries and aquaculture value chains in Gaza Province?

Our observations, enquiries, and interpretation revealed the wide disparities that exist in the status of women involved in the various stages of the fisheries and aquaculture value chains. Not surprisingly, education and income condition the opportunities they can seize to engage actively in economic and associative activities. This was particularly true regarding women’s belonging to credit and saving groups. Poverty was said to reduce awareness of the advantages of collective action, and illiteracy hampers rising to managerial positions, although membership is open – at least in principle – to all villagers,

and tends to comprise in equal proportion, illiterate and literate women. As a consequence, women in socially and economically disadvantaged positions are constrained to engage in more dependent relationships with money-lenders to access capital (interest rate is between 10-20 percent, with monthly repayments).

The number of female-headed households is particular high in Gaza. Aside from the hardship this represents, when numerous young children have to be looked after, it is not always an obstacle. A woman's husband may be away most of the time – leading to the household being classified as female headed. However, remittances from relatively well-paid employment in South Africa can make the household one of the better off in the community. Heading a household also opens for opportunities, new responsibilities and individual initiatives, providing social status and recognition, usually beyond the household (**Box 1**).

**Box 1:**

An example of individual successful initiative, despite adverse circumstances, Bilene, Gaza Province.



M. is 60+, a widow and she supports her eight children and grandchildren. She is a fish seller and a vocal and well-recognised member of one of the PCR groups in Bilene. She was poor and started selling fish from house to house. After some time and her accumulated savings, she bought a freezer. Then in 2003 she got a place in the market and had to build her store (barraca - pictured) in two months. She uses the money she earns as a fish seller to pay school fees.

The current functioning of markets – for land as well as credit – disadvantages those without resources and education. For women who are separated, divorced or widowed at a young age, fragile land tenure and property rights and lack of resources reduce the number of income generating options and access to funds, increasing their vulnerability and trapping them in undesirable dependency relationships (e.g. with money lenders) that further weaken their status.

The prevalence of HIV/AIDS in Gaza Province, with one of the highest rates in the world, directly weakens women's physical resilience and capacity to engage in labour-intensive tasks. This insidiously affects their agency and access to economic opportunities. Labour-saving tools or equipment, such as lighter tools, smaller sacks for feed, or small mills for preparing feed, which could reduce physical effort, need to be considered in this regard.

In sum, cultural barriers appear relatively low for women to participate in and benefit from their engagement in various stages of the fisheries and aquaculture value chains. Recent associative efforts have been more inclusive (e.g. PCRs groups, associations of aquaculture producers<sup>25</sup>). However, current institutional mechanisms, including markets,

<sup>25</sup> With the caveat that these efforts need to be pursued to ensure that leadership and management does not become monopolized by men – see Section 2.3.2.

provide few opportunities for women, putting women at an economic disadvantage and unable to change their situation.

### 2.3 Aquaculture value chain

Figure 3<sup>26</sup> shows the relationship between actors and the flow of information and support, in the aquaculture value chain.

#### Categories of aquaculture producers

Aquaculture producers operate in two broad categories: individually and in associations. All have received support from INAQUA. The characteristics of producers are different according to which category they belong to.

*Individual producers* comprise: (i) young, educated, entrepreneurial individuals engaging in relatively high-input/high-output aquaculture, such as the tilapia cage operator visited in Chidenguele (Photo 2); and (ii) agricultural farmers, with resources<sup>27</sup>, curiosity and initiative who have started extensive pond culture on their land, as was seen in Nhancutse (Photo 3). These operations have in common that they hire labour: usually one or two people (males) are employed full time, in addition to seasonal labour for specific activities such as harvesting.



**Photo 2:** Cage production (tilapia) in Chidenguele, Gaza Province.

<sup>26</sup> Due to time constraints in the preparation of the mission report, figures and diagrams have been drawn by hand. It may be possible to provide computer diagrams at a later date.

<sup>27</sup> These farmers have some assets, be it land, income (including remittances), and/or education, which were visible at the time of the visit. This gives them a relative advantage over the “poorest of the poor”.



**Photo 3:** Lady Entrepreneur, individual pond owner in Nhancutse, Gaza Province. Lady Entrepreneur, individual pond owner in Nhancutse, Gaza Province.

Fingerlings are provided free of charge by INAQUA for two cycles, regardless of the type of fish farmer. INAQUA also provides technical information and support regarding pond management. Some producers are also experimenting with the collection of wild fry or the selection of breeders from their stock for fry production. The planned opening of CEPAQ should alleviate this bottleneck. Upon advice from INAQUA, some producers have also experimented using chicken feed, as well as agricultural by-products and pond fertilisation to compensate for the lack of availability of adapted fish feed<sup>28</sup>.

*Associations of producers*, which are both formal and informal, gather people who tend to be poorer and have lower education levels. In these associations, aquaculture is practiced very extensively. Their members are predominantly, but not exclusively, women.

#### **Membership, and perception of the relevance of, groups in support of the aquaculture value chain.**

Producers' associations and PCR groups are the two main forms of collective action in support of aquaculture development in the Province.

#### ***Producers' associations***

Prior to the intervention of INAQUA, members of producers' association are mobilised through the SDAE or local NGOs (e.g. World Vision for the association in Bilene, Hunger Project for the association in Zuza) to open a demonstration pond. All the members of the association manage the pond communally as a part of the training process. Thereafter, each member will be encouraged to open his/her own replica pond and manage it individually.

Although members of producers' associations are mostly women, leadership and management responsibilities tend to be shared between elected male and female association members. The producer association of Zuza, for example, has eight women out of twelve members. The elected president and treasurer are men, while the elected vice-president and secretary are women. The association's bank account is in the names of three members: two men and one woman. The association discusses all the decisions collectively among its members. The situation is somewhat similar in the Bilene and

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<sup>28</sup> The cage operator imports formulated feed from Tilapia at great expense: 45MTZ per kg plus transport costs.

Chibuto producers' associations who have mixed membership and leaders<sup>29</sup>. Literacy within associations is very variable, but, overall, their *modus operandi* appears quite inclusive, regardless of gender, income and literacy levels. Entering and exiting the association is open (no fee payment required or penalty); provided that newcomers share the same interest in aquaculture. Those who decide to leave the association face no prejudice. The members of the association perceive the association as positive. The association triggers a spirit of shared assistance amongst its members, especially when they are learning about aquaculture. When the number of individually owned ponds increases as the activity develops, the spirit of cooperation is something that needs to be maintained. For the INAQUA extension officer, working with producers' associations makes sense, especially during the training and extension phase, but is also fraught with difficulties related to coordinating all members for specific activities such as the delivery and stocking of fingerlings. Working with individual producers is seen as easier and more effective, but sadly out of the question due to INAQUA's limited human resources.

### ***Credit and savings groups***

To support the production of fish, funds and credit can be accessed through the FNI (for experimental operations such as the cage culture enterprise) and PCR group respectively. The FFP can also provide funds, based on a leasing system, to aquaculture entrepreneurs, either individual or in associations, but none of the producers interviewed reported having applied for any funds.

PCR groups are commonly encountered in villages. Their formation has been widespread in inland areas thanks to SDAE. These groups fulfil an essential socio-economic and cultural function by providing a forum for poorer people – in particular women to whom these groups were initially targeted, and who cannot access other forms of credit – to develop a savings awareness and basic financial management skills, as well as access small sums for personal investments. The methods of these groups vary from place to place, and according to the different categories of members. Their number has multiplied – sometimes several PCR groups co-exist in the same village as the result of the splitting of a group that had become too large – though perhaps at the expense of their good functioning, due for example to the reduced availability of advisory support, difficulty to save regular amounts for some members, or risk of fall-out among members<sup>30</sup>.

When both a producers' association and a PCR group are found in the same location, their functioning is inter-linked, in large part due to the fact that both male and female members belong to both groups, as was the case in Zuza, evening out the relative power and influence of each group on the other. Many participants, however, reported the insufficiency of the credit obtained through PCR savings to support an investment in aquaculture: if 2,000-10,000MTZ can be borrowed from a savings group, 25,000MTZ was quoted as a minimum to dig an average-sized pond. This was despite their perceived benefits for other individual initiatives such as establishing a small shop, or fulfilling basic needs (e.g. purchase some clothes). For slightly wealthier aquaculture producers, such as the female pond owner in Nhancutse, PCR groups are not very attractive. Yet, larger sums

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<sup>29</sup> Bilene's association has a female president. Malehice's association also has a female president. Godido's association has a male president and a female vice-president. The internal organization of Chibuto's associations is not complete yet. Usually, members who have studied are given leadership responsibilities.

<sup>30</sup> This observation about PCR groups is general for all groups met, regardless of their closer association with either aquaculture or capture fisheries.

through traditional micro-finance institutions tend to remain out of reach because of their tighter requirements (and perhaps also because of some ignorance on their behalf about aquaculture).

These experiences, as well as the broader literature on the benefits of associations, suggest that forming groups for the sake of associating people is not a magic formula. Many conditions are necessary for collective action to be effective. These include a common agreement on a problem that needs solving or goal that is worth pursuing, some freedom of action, individual motivation for a medium to long term goal, give and take and trust in the reliability of others<sup>31</sup>. When these conditions are satisfied, associations can be very powerful to overcome barriers that their members would otherwise face individually, for example to access funds and knowledge or advocate their interest. Problems often arise with associations when they are imposed top-down, with little consideration of the interests and motivations of their members. To some extent, this may be observed here with PCR groups, where a target number of groups had to be established by IDPPE as part of its activities. To a similar extent, the formation of associations of aquaculture producers is motivated by the logistical constraints of INAQUA to support producers individually: associations are used as a forum where technical aquaculture information and know-how can be spread. However, the association model they are promoting encourages individual ownership and management of ponds by association members. As such therefore, it does not preclude commercial, profit-oriented forms of fish farming. Current aquaculture producers' associations are still in their early days and it will be interesting to monitor their evolution and success at increasing fish production. New associations can also be more open and welcoming for women than traditional organizations. This, combined with the novelty of aquaculture, could further support the beginning of the 'massificação' of aquaculture in the country.

### 2.3.1 Bottlenecks and weak links in the aquaculture value chain

Bottlenecks and weak link in the aquaculture value chain are identified in Figure 3 and numbered by decreasing order of importance.

The most important bottleneck in the aquaculture value chain, repeatedly identified by chain actors themselves, is **fish feed** availability - "*ração*" - identified as [1] in Figure 3. The availability of good quality, sex-reversed, **fingerlings** is also a problem in Gaza Province. This bottleneck, however, was not considered serious by the interviewed value chain actors (identified as [2] in Figure 3). This was because the private hatchery of Vilanculos, 800km north from Maputo. This hatchery sells fingerlings either directly to aquaculture producers, or to INAQUA<sup>32</sup>. INAQUA then supplies them to the producers they are supporting. Some fish farmers are also experimenting with wild fry collection to stock their ponds and others, more advanced, with breeding, despite the uncertainties associated with both operations. From 2015, the "Mapapa Centre of training and demonstration for aquaculture" (CEPAQ) should contribute to increased availability of good quality fingerlings. However, it is unlikely to cover the demand related to the expected rapid expansion of the number of ponds and producers.

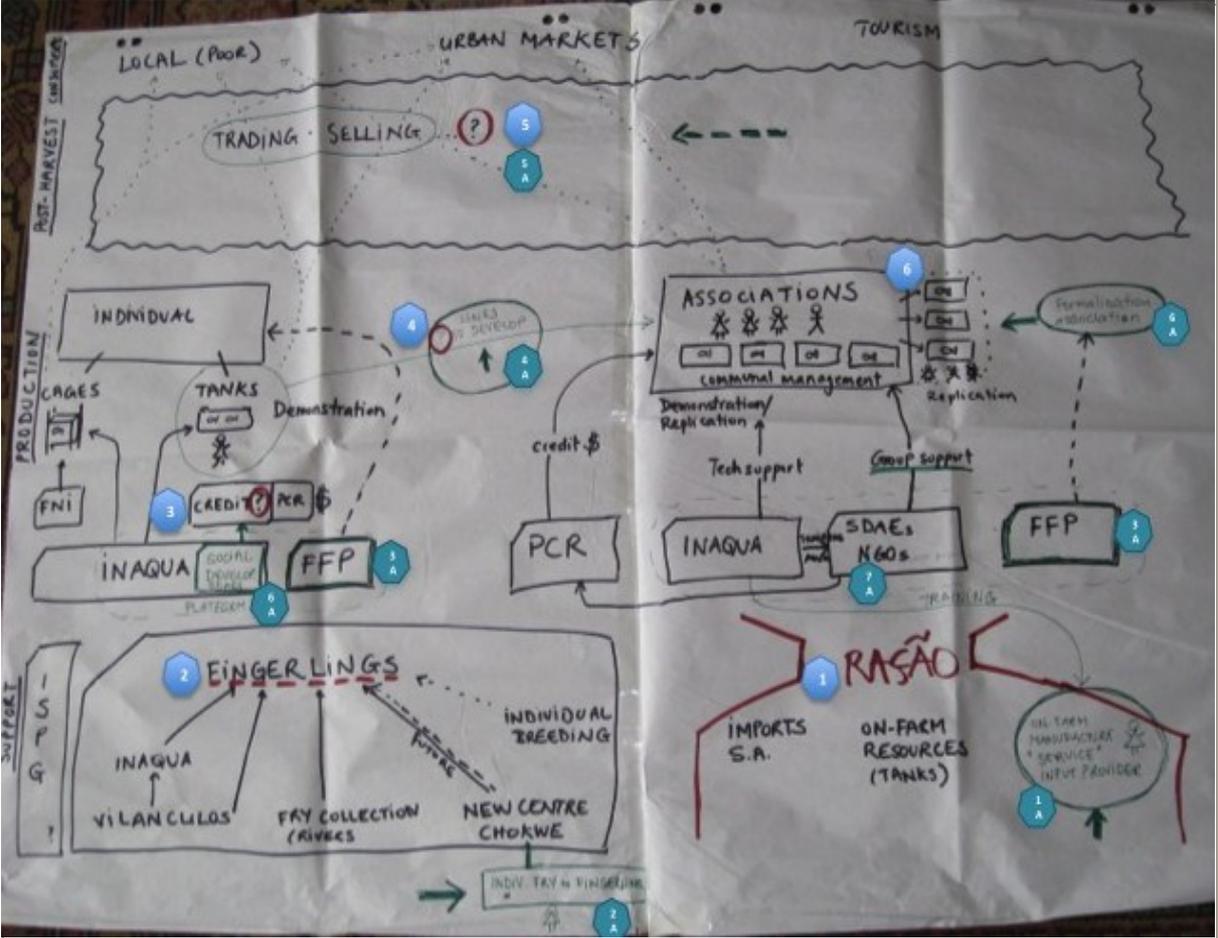
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<sup>31</sup> Ostrom, 2004

INAQUA purchases fingerlings from Vilanculos at 3MTZ/unit, and covers the transport costs to producers.

**Credit** schemes, providing larger sums of money to enable investing in aquaculture facilities, and complemented by flexible repayment schemes, adapted to production cycles are also lacking (identified as [3] in Figure 3).

**Figure 3:** Bottlenecks and areas for suggested interventions in the aquaculture value chain, Gaza Province



**Linkages between different groups of aquaculture producers**, such as individual extensive producers and producers' associations are non-existent or weak (identified as [4] in Figure 3). Exchanges and reciprocal visits between individual producers and/or producers' associations are not practiced, despite the fact that some producers own and manage "demonstration" ponds.

Post-harvest operations, in particular **fish trading**, remain so far informal due to the small quantities produced. The producers themselves sell the fish directly to local villagers (smaller fish) or to local hotels and restaurants (larger fish). No distribution network is established to reach consumers. This leaves a grey area (identified as [5] in Figure 3) that will require organising when production levels increase and the production needs to reach consumers in both urban and rural areas, and in particular contribute to the Government of Mozambique's aim to increase fish consumption and food security.

**Associations of aquaculture producers are not always recognised.** Their functioning can lack clarity. This can have implications for women and gender equality in the association. Given that association members are encouraged to own individual ponds, this can open the door to some overtaking by male members of the association. This was witnessed in Zuza where, of the 12 members (4 men, 8 women), three male members owned a pond each, while the remaining four ponds belonged to women (identified as [6] in Figure 3).

Finally, **extension support from INAQUA is limited** to one aquaculture technician for the entire Province (identified as [7] in Figure 3). Agriculture extension officers from the SDAE are given some training in aquaculture and they impart their knowledge to producers when they are in the field providing agricultural support. This ad-hoc structure is however likely to rapidly become inadequate with the increasing number of producers and their more complex technical requirements.

### 2.3.2 Suggestions for interventions

The bottlenecks and weak linkages identified in the preceding section constitute various entry points, through which one can promote gender sensitive interventions. The initial ideas for interventions have been discussed and refined in cooperation with the mission's key institutional stakeholders. The ideas should not be considered as finite, but as a basis for further discussion and adaptation, or even rejection, by the Ministry of Fisheries.

When interventions are discussed and designed a number of factors need to be borne in mind (Box 2). It is crucial that interventions are in line with the Government of Mozambique's current strategies on gender equality, the enhancement of small-scale fisheries and the expansion of small-scale aquaculture. Besides that, the interventions need to be developed in synergy with the interventions of the ProPESCA and ProAQUA programmes. Interventions can be *directly pro-poor*, targeting the most vulnerable groups (men and women), or *indirectly pro-poor*. It is *indirectly pro-poor* when the objective is to increase production, and thus the availability of cheap fish to poorer groups. The two types of interventions are not mutually exclusive. They can co-exist as part of a comprehensive strategy, where the overall goal is to increase the availability of quality fish products for food security in the country. Improving food security and fish availability will not automatically contribute to women's empowerment and gender

equality<sup>33</sup>. Special attention has to be given to the inequalities that exist between women and men and the benefits that they may draw from the planned interventions<sup>34</sup>. The contents of apply equally to interventions in aquaculture and capture fisheries. Choosing the right target groups will be crucial. This imply differentiating sub-groups even within the target-group, e.g. less or more disadvantaged women from female headed households.

## Box 2:

### Important requirements for the suggested pilot project interventions

- Necessity to **support current strategies of the Ministry of Fisheries** (gender, small-scale aquaculture expansion, small-scale capture fisheries) and build on the interventions of the ProPESCA / ProAQUA projects.
- Necessity to **be gender sensitive**: interventions should specifically focus on women where they have been identified as most vulnerable, under-represented or not fully benefitting from their involvement in the fish value chain. Where this is not the case, both men and women should be equally targeted, but attention should be paid to the monitoring of the dynamics of their respective involvement and their sizing of opportunities and benefits.
- Necessity to consider **two types of possible, complementary interventions**:
  - **Directly pro-poor**: where the objective of the intervention is to improve the lives of poor women and men, involved at all stages of value chain;
  - **Indirectly pro-poor**: where the objective of the intervention is to increase fish production and availability through more business-oriented activities targeted at men and women producers.

Areas of interventions in the aquaculture value chain are indicated in green in Figure 3

## Primary interventions

- **Nursing of tilapia fry for the production of fingerling in individual small production units<sup>35</sup>.**

***Preferential target group: women, with some education, from medium to higher income levels.***

The idea is to speed up and complement the supply of fingerlings from CEPAQ, whilst stimulating private initiative through the establishment of independent, small, "satellite nurseries". The value chain challenge is to overcome the insufficient availability of

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<sup>33</sup> Jackson, 1996

<sup>34</sup> According to gender theories, this implies moving beyond "Women in Development" (Harvard framework)-type of activities where women's personal and social benefits are not commensurate with their increased participation and their position in society is not challenged, to a "Social Relations Framework" (Kabeer, 1994) and "Agency" framework (World Bank, 2012) where gender inequalities in the distribution of resources, responsibilities and power in specific sectors, are analyzed to design interventions, including technical ones, which support women in their seizing of opportunities and enable them to be agents of their own development, in economic and social terms.

<sup>35</sup> [2A on Figure 3]

fingerlings and their low quality (i.e. not sex-reversed). We suggest starting with tilapia fry, which have been sex-reversed at CEPAQ, thereafter distributed to the women nursing them. One foresees satellite nurseries as very simple enterprises. This kind of enterprises tend to be suitable for women (e.g. experiences in Asia), and they support the overall development of aquaculture. Later, women managing individual nurseries could be taught to carry out the sex-reversal process. Sex-reversal requires some relatively simple know-how (handling of hormones), but strict timing of operations needs to be respected<sup>36</sup>. Alternatively, mixed-sex fingerlings could be nursed until they are of sufficient size to determine the sex (10 cm). Thereafter, sorted and sold separately to grow-out producers. Nursing facilities could be set up close to the house or the *machamba*. Only hapas and smaller ponds are needed. However, fry and fingerlings have special feeding requirements that will need to be carefully considered. Early juvenile fish (0.02-10.0g) require a diet higher in protein, lipids, vitamins and minerals and lower in carbohydrates. This is particularly important if the fry are to be sex-reversed. Sub-adult fish (10-25g) require more energy from lipids and carbohydrates for metabolism and a lower proportion of protein for growth<sup>37</sup>. Fingerling feeding practices however vary from place to place: Many farmers feed only rice bran 4-5 times daily, others rely on natural food enhanced with organic/ inorganic fertilizers, while others feed small pellets prepared for catfish or shrimp near to satiation. This gives scope for adaptation of the feeding to local circumstances. The supply of feed is considered under the next suggested intervention.

A detailed protocol of collaboration and assistance between individual producers and the CEPAQ needs to be established to:

- Ensure adequate cooperation, including training, knowledge transfer and technical support, is deployed between the CEPAQ, ISPG and individual fingerling producers.
- Determine a fair sale price for fingerlings and avoid any undue market competition between individual nurseries and the CEPAQ to grow-out farmers that could arise from the continued provision of Government-subsidized fingerlings to grow-out farmers.

The development of “satellite nurseries” is justified on several grounds. First, It is unrealistic to expect that CEPAQ will be able to satisfy the entire demand in fingerlings generated by the “*massificação*” of aquaculture. INAQUA has already recognized this. It has also acknowledged that not only will higher numbers of fingerlings be required, but that travel distances between hatchery/nursery and stocking sites will also need to be reduced. Secondly, creating an aquaculture sector dependent on State/donor-sponsored hatchery-produced fingerlings would be against the demonstrated failure of such a form of assistance and against the stated vocation of the Centre for training and demonstration. Thirdly, the simultaneous development of small-scale, individually managed fingerling production units in parallel to the development of the CEPAQ should ensure that the hatchery activities of the CEPAQ are confined to the maintenance of good quality genetic

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<sup>36</sup> In the longer term (+3-4 years), these nursing units could evolve into independent hatcheries with their own broodstock. This is however beyond the immediate scope of the pilot project.

<sup>37</sup> Further information may be accessed on:

[http://www.panoramaacuicola.com/noticias/2002/06/01/nutrition\\_and\\_low\\_cost\\_feeding\\_management\\_for\\_tilapia\\_.html](http://www.panoramaacuicola.com/noticias/2002/06/01/nutrition_and_low_cost_feeding_management_for_tilapia_.html) and <http://www.fao.org/fishery/affris/species-profiles/nile-tilapia/nutritional-requirements/en/>

stock and to training. Satellite nurseries will not compete with the CEPAQ if its activities remain within these confines. As was suggested above, a partnership should be struck between both entities.

In this context, the pilot project could therefore consider: selection and training of a small number of interested women, supply of nursing equipment, follow-up support in fingerling handling, transport and distribution of produced fingerlings to grow-out farmers, production of promotional and information material.

➤ **Preparation of fish feed and/or pond fertilizer in individual small production units<sup>38</sup>.**

***Preferential target group: women, with no or low education levels, from low to medium income levels, preferably machamba owners, but not necessarily<sup>39</sup>.***

The objective here is to assist fish farmers with access to fish feed. Individual women should be encouraged to produce simple, farm/*machamba*-based fish feed, whilst working in close collaboration with INAQUA in the trial of a feed formula. Fish feed could be formulated according to the requirements of farmers, i.e. whether they are nursing or growing-out fish. This idea is justified by:

- (i) the fact that fish feed does not necessarily need to be integrated in grow-out farms. Fish feed can be sold to grow-out farmers by individual providers as other inputs to the aquaculture operations;
- (ii) the close connection between feed preparation based on agricultural by-products and *machamba* cultivation;
- (iii) the easy integration of this activity in women's daily activities, as full time cultivation of a pond may add an extra burden on their time.

A number of factors need nonetheless to be carefully considered:

- The willingness and interest of female *machamba* cultivators, in relation to the species grown on the *machamba* and their use in fish feed, as well as the fit of this additional task amongst their daily activities.
- The preparation of the feed itself, and the technical constraints that may be faced in doing so. The fish feed for tilapia needs to be very finely crushed to facilitate digestion and minimise losses. It therefore requires mechanical grinders. Grinders could potentially constitute a hurdle, either economically or culturally for the women.
- The economic feasibility of selling the fish feed should be considered in collaboration with INAQUA. INAQUA works hard to elaborate a feed formula adapted to the means of small-scale fish farmers. Dietary requirements involve the inclusion of proteins – a more expensive component unlikely to be supplied from on-farm resources only. Price may be an issue for very small-scale and extensive grow-out operations. However, demands for formulated feed exists, in particular

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<sup>38</sup> [1A on figure 3]

<sup>39</sup> Landless employees on *machambas* could also be potentially targeted provided that *machamba* owners allow use and collection of their farm by-products.

from independent and entrepreneurial grow-out fish farmers. Associations of grow-out producers may not be as interested, due to the small size and low profitability of their operations and the fact that they can produce their own feed. Fingerling producers are likely to further demand for specially-formulated feed. Market openings and price determination should therefore be included in a study to assert the feasibility of this intervention<sup>40</sup>.

The pilot project could consider selecting and training a small number of interested women, supply grinding equipment, follow up support in feed formulation and manufacture, transport and distribution of produced feed to grow-out farmers. This could be done in addition to investigating the abovementioned conditions in a preparatory phase of the pilot project.

Alternatively, to feed formulation, enhanced fertilisation of ponds by **specially prepared pond manure** could be considered. Prepared by the same target group, on the same principle as farm-based feed, with addition of chicken/cow manure and possibly separately supplied N, P and K<sup>41</sup>, this intervention could be more immediate than the elaboration of the feed that is still experimental.

The pilot project could test this intervention in its early stages with only a few carefully selected women. Based on its technical and economic results (which would help in determining the price of the fertilizer), the project could then consider: selection and training of a larger number of interested women, supply of equipment and N, P, K, follow-up support in fertilizer manufacture, transport and distribution of produced feed to grow-out farmers.

Although proposed here as a separate service supply to grow-out farmers in order to minimize the initial investment and additional workload that a vertically integrated aquaculture production system is likely to impose on female pond operators, similar interventions could also be proposed to existing pond operators, as appropriate.

➤ **Improving access to funds and credit<sup>42</sup>.**

***Preferential target groups: women and men, individually or in association, regardless of their education and income levels.***

This suggestion refers in particular to the current “invisibility” of the Fishery Development Fund (FFP) for fish farmers. Despite its mandate in providing funds and equipment through a leasing system for aquaculture initiatives, the FFP appears to fall short of fulfilling this role. The application process is perhaps overly complex (and lengthy) something that discourages producers from applying. FFP could advertise its role better. It could support applicants in order to ensure that more of FFP’s funds are allocated for investments in aquaculture. The funds could supplement the limited amounts that pond operators can borrow from Savings and Rotating Credit (PCR) groups.

The pilot project could consider some joint mobilisation activities. In order to attract people: joint field visits, “open days” or information seminars could be held in strategic

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<sup>40</sup> This feasibility study could be either part of the pilot project or commissioned ahead of the pilot project.

<sup>41</sup> There is a lot of experience regarding the fertilization of tilapia ponds in Asia.

<sup>42</sup> [3A on Figure 3]

locations. In these events, members of the Provincial delegation of the FFP, INAQUA and SDAE could raise awareness about the funding possibilities of FFP to aquaculture operators. The project could organize application-writing workshops. In addition, the project could support individual pond operators and/or aquaculture associations on record keeping and encourage sound financial management of received FFP funds. Each action should ensure that an equal number of men and women attend.

This collaborative effort could be strengthened through the creation of a support “platform” gathering financing as well as extension administrations. This suggestion is detailed further.

- **Development of a “mentoring” role for experienced fish farmers towards new ones.**<sup>43</sup>

***Preferential target groups: women, with some education, from medium to higher income levels***<sup>44</sup>.

When distances allow, one could consider strengthening the linkages between relatively experienced, entrepreneurial individual fish farmers and individuals or associations that are new to the activity. The Nhancutse producer (photo 3) is an example of a woman fish farmer that could act as a mentor. A number of individual fish farmers are already acting as “demonstrators” for INAQUA and constitute excellent examples of entrepreneurial spirit, even if their aquaculture activities remain extensive and their production is low. Due to their relatively high social and economic position, these individuals also tend to be receptive to new ideas and willing to share their experience in aquaculture with newcomers, especially young people who are unemployed. The idea would be to capitalise on the experience of aquaculture demonstrators – in particular women – to act as aquaculture “mentors” backing newcomers with information and technical know-how on pond management. This would reduce the demand on the limited human resources of INAQUA and mitigate the limited hands-on experience of SDAE agricultural extension officers in aquaculture.

The pilot project could consider selecting and training a small number of interested and relatively successful female individual pond operators<sup>45</sup>. Identify a nearby aquaculture association(s) and/or individual new producers and establish a calendar of visits and exchanges. The pilot project should further arrange for provision of transport for the visits and exchanges, and production of promotional and information material for distribution to interested participants.

- **Officialising aquaculture producers’ associations**<sup>46</sup>.

***Preferential target groups: producers’ associations, regardless of the characteristics of their membership but emphasizing the representation of women among members.***

It was noted that some aquaculture producers’ associations – especially those created by NGOs – do not have an official status. The producers’ associations still operate as informal

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<sup>43</sup> [4A on Figure 3]

<sup>44</sup> Depending on circumstances, male aquaculture demonstrators could equally be involved.

<sup>45</sup> Sra. Deolinda in Nhancutse is a case in point.

<sup>46</sup> [6A on Figure 3]

gatherings of interested producers (example of the Zuza association). The lack of official recognition does not undermine the delivery of INAQUA's technical support, but it hampers the access to financing sources. The associations appear to function on a democratic basis, with members of the secretariat been elected from the start of the association. The initial majority of women members in the secretariat have also been respected. The leadership, however, has not been renewed and the group dynamism in the associations seems to erode progressively. The fact that earnings from the first harvests have not yet been re-invested suggests that inaction seems to prevail. Formalization of these groups into functional associations – of a similar model to those created by SDAE and INAQUA – could re-stimulate their internal dynamism. An official recognition would enable the associations to access higher amounts of credit. It is central for the groups to preserve the emphasis on women's participation. The statutes of the newly created associations could specify membership ratios and allocation of leadership responsibilities between men and women members.

The pilot project could consider identifying all existing informal aquaculture groups throughout the Gaza Province. Provide legal support or other assistance<sup>47</sup> to each informal group in its registration process. Follow-up and build awareness on the functioning of associations and responsibilities of members. The pilot project could produce promotional and information material on the good governance of associations.

- **Creation of an inter-institutional “platform” to strengthen knowledge sharing and coordinated actions**<sup>48</sup>

***Preferential target groups: current institutional stakeholders at Provincial and District levels who support the aquaculture and capture value chains***

Overall support to the aquaculture value chain – and to some extent the capture fisheries chain too – is fragmented. The quality of the support that key institutional stakeholders such as INAQUA, IDPPE for small-scale capture fisheries, ISPG, SDAE, FFP, and NGOs provide to small-scale aquaculture producers, could be improved with more coordination and sharing of knowledge. Creating such a platform, or forum, where representatives of each institution at Provincial and district level meet on a regular basis, could be a step in this direction.

The pilot project could consider identifying a neutral meeting point; define calendars and agendas for meetings and exchanges of information on aquaculture interventions.

## **Secondary interventions**

- **Development of post-harvest activities and networks (trading and distribution of fish)**<sup>49</sup>

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<sup>47</sup> Possibly through an intervention by SDAE.

<sup>48</sup> [7A in Figure 3

<sup>49</sup> [5A in Figure 3]

***Preferential target groups: women, with no or low education levels, from low to medium income levels.***

The following interventions could be planned for a second phase of the implementation of the project. At present, the trading of farmed fish is *ad-hoc* and informal due to the low volumes produced. Support in organizing the post-harvest section of the aquaculture value chain will become necessary to ensure that the inequalities and vulnerabilities that were observed among female capture fish traders (Section 2.4.1) are not replicated in the context of farmed fish. There is suggested an intervention in the capture value chain to improve the conditions and status of women fish traders. If these interventions are implemented (see Section 2.4.2) during the first phase of the pilot project the aquaculture component could learn from these post-harvest results and replicate the interventions in the second phase of the pilot project.

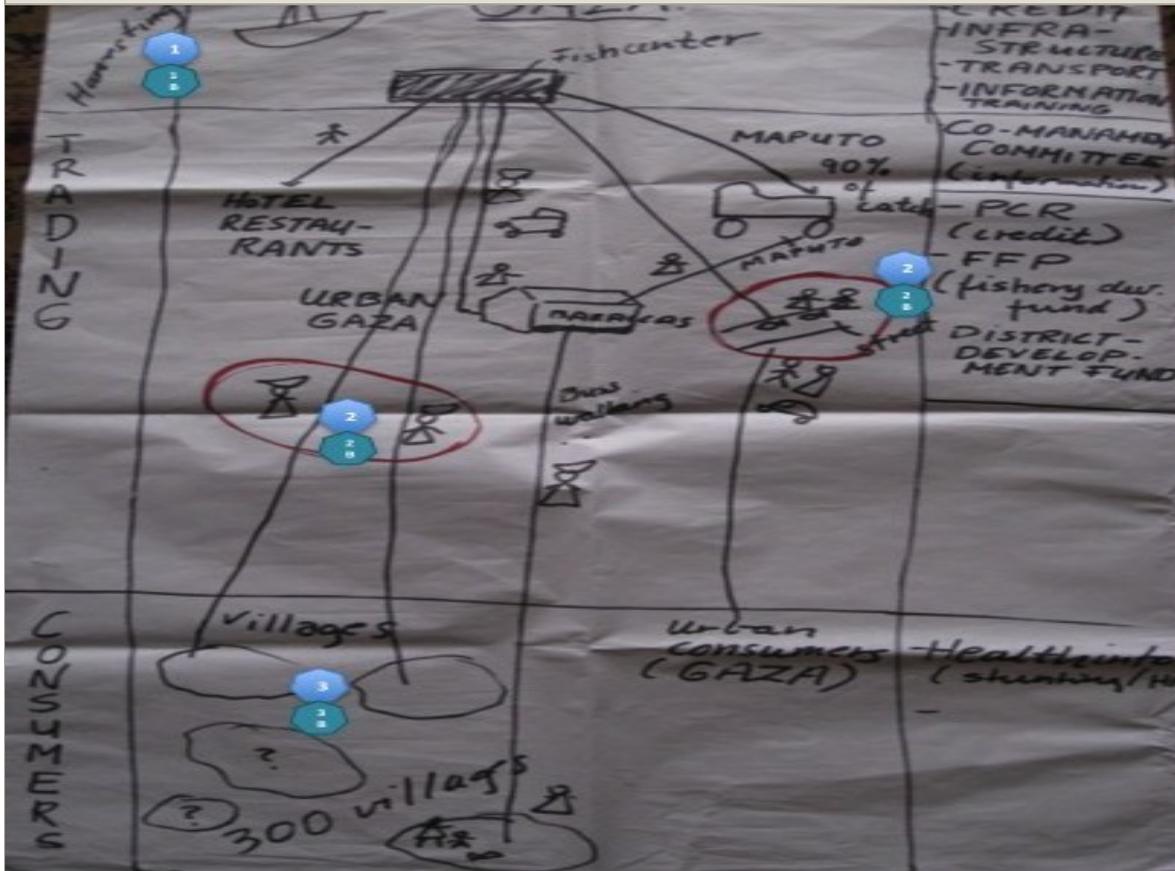
The current non-availability of extension officers is a serious constraint to the implementation of the pilot interventions. In the first instance, reinforced aquaculture training could be provided to the agricultural extension officers of SDAE. The extension officers collaborate with INAQUA. In the near future INAQUA is planning new recruitments in the province (12-13 posts). This should contribute to alleviating the current shortage in capacity. The new recruits should fully support the implementation of the pilot project activities.

## **2.4 Capture fisheries value chains**

### **2.4.1 Bottlenecks and weak links in the capture fisheries value chain**

A detailed description of women's role in the capture fisheries value chain is provided in Appendix 4. In figure 4 bottlenecks and weak links in the capture fisheries value chains are identified.

**Figure 3:** Bottlenecks and areas for suggested interventions in the capture fisheries value chain, Gaza Province



Women fish traders are an important group for the food-security in Gaza. The women are the infrastructure for trading of fish internally in Gaza. But they lack a place in the decision making structures within fisheries.

Women fish traders<sup>50</sup> are not members of the **Community Fishing Councils (CCPs)**. Since CCPs are central to fisheries management, this is a major weakness. In addition, few women fishers and women boat owners are members of these decision-making structures. Rules of functioning of CCPs, including entrance fees and requirements, are location-specific. Female fish traders sometimes partake, but this is the exception rather than the rule, and when they do, they are in the minority<sup>51</sup>. This trend concerns all female fish traders, regardless of their wealth or status. Fish sellers should be very concerned with



**Photo 4:** Fish sellers on the main street of Chibuto, Gaza Province.

<sup>50</sup> “Traders” and “sellers” are understood as synonyms here. When it is not the case (i.e. traders are the intermediaries between the fishers and the sellers, and sellers are the penultimate agent of the value chain prior to the consumer), this is specified.

<sup>51</sup> This was the case in the CCP of Costal do Sol, in Maputo.

the implementation of fisheries management measures that determine fishing seasons (including closed seasons), species and their sizes because of the direct impact this can have on their trade. This is at odds with the fishers' view that inclusion of traders in CCPs would improve communication and understanding between these two agents of the value chain, notably regarding the determination of fish prices. Yet, barriers to inclusion simply seem to boil down to daily commitments with timetables that are not easily merged, and the difficulty of finding times when both groups could meet<sup>52</sup>.

**District Forums** are also a decision-making forum where women fish traders are not represented.

Women fish traders/vendors should be able to voice their opinion about where market places for fish should be built; how much they should pay in tax for selling fish. The taxes vary widely from place to place for those selling fish on street pavements, either legally or illegally, some after dark. The latter being prone to harassment from the municipality police.

In addition to the decision making forums female fish traders are usually not members of **Saving and Rotating Credit groups (PCRs)**. Therefore, they not able to access the necessary funds to purchase minimal equipment that would allow them to transport and sell fish throughout the day in good conditions (e.g. cool boxes).



**Photo 5:** Fish sellers sitting illegally in the evening in one of the streets of Xai-Xai, Gaza Province.

Processing and preservation is another problem. In Chibuto the team learnt that unsold fish at the end of the day goes to waste due to lack of knowledge and means of preservation <sup>53</sup>. This is probably also the case in other parts of Gaza.

Regarding consumption, post-fieldwork discussions on eating habits in Mozambique revealed a general **lack of nutrition awareness**, including of the benefits fish as part of a balanced diet (indicated as [3] in **Figure 3**).

<sup>52</sup> Although this may sound like an easily made 'excuse' to the additional coordination effort and opening of the CCP to women, this is understandable and most likely genuine: fishers' fishing commitments keep them away when traders are available, and vice-versa, due to their successive responsibilities in the value chain.

<sup>53</sup> This may also be compounded by consumer preferences for fresh fish, and the localized nature of preferences for some processed forms (e.g. smoked in Chidenguele but not in other places).



**Photo 6:** Unhygienic conditions in which fish is sold by street-based fish sellers, Xai-Xai, Gaza Province. Fish is brushed and splashed with water to chase off flies. Little or no shade is available.

In sum the post-harvest sector is characterised by women fish traders that are not organised. They operate individually in buying fish from fishermen. The conditions they sell the fish under is unhygienic. The environment for selling fish is demanding many places. The poor women selling fish from baskets have to spend hours walking in order to reach villages with the fish.

#### **2.4.2 Suggestions for interventions**

We suggest some interventions for the capture fisheries value chain in order to mitigate the bottlenecks and weaknesses identified. In order to reach poor consumers with larger quantities of fish, especially consumers in more remote villages, the pilot project should focus on extending the supply of fish further inland. This implies working with women traders as the main target group, and especially with the group of vulnerable street sellers and women selling from village to village.

## Primary interventions

### ➤ Organising women fish traders.

*Preferential target groups: individual women selling fish around rural villages (basket women) and street sellers in more urban areas<sup>54</sup>*

Ninety percent of the marine fish landed in Gaza is sold to Maputo. Since, women fish traders are not organised they are not able to act collectively. This weakens their bargaining power at the landing sites for fish. When traders with refrigerated trucks from Maputo turn up buying large quantities of fish, the women lose out. In addition, the traders from Maputo often negotiate via mobile phone before they arrive at the landing site. Increasing women fish traders' negotiating skills at the landing sites would enable them to compete with the bigger actors selling fish to Maputo, and thus, enable them to retain larger quantities of fish within the province something that is positive for the food-security situation. To do this, organising women fish traders could be done through a three-pronged approach:

- (i) **Increase their participation in Savings and Rotating Credit groups (PCR groups)** through mobilization of fish traders– or establish PCR groups exclusively for women fish traders. This could raise awareness about savings, hygiene, and crucially, enable members to acquire the minimal equipment. Equipment needed to enhance fish quality, transport and short-term conservation. With the support of IDPPE, PCRs could be used as a forum to enhance the negotiating skills of fish traders, as well as their awareness of the nutritional benefits of fish consumption.
- (ii) **Establish a wholesale-cooperative type of facility**, whose members would women fish traders, and which would centralise landing arrangements and fish price negotiations. This model would mean that the women vendors could buy larger quantities of fish - and achieve lower prices. The cooperative would need a site where the different vendors could get a share of the fish for resale in urban and rural areas. It would help women sellers walking from village to village if some of the fish obtained by the cooperative could be moved inland in order to ensure that the fish reaches new consumers and that new markets are created. There is little doubt that the negotiating power of the women fish traders would be enhanced if they were in a cooperative, and would balance that of actors selling in Maputo. However, the advantages and disadvantages of such a set-up would need to be carefully considered<sup>55</sup>.
- (iii) **Improve the conditions for the sale of fish.** Improved organisation of women fish sellers would make it possible to establish a dialogue with administrations in districts about the sale of fish, voice their opinions and thus influence where market facilities are built. A present, market facilities are built or rehabilitated

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<sup>54</sup> indicated as [2B] in **Figure 3**

<sup>55</sup> This suggestion came up from the post-field work discussions held with IDPPE. It is indicated here for the sake of comprehensiveness but its proposed functioning seems somewhat unrealistic and its monopolistic nature would warrant further reflection and discussion.

in areas where fish customers do not go, prompting fish sellers to choose road sides or street pavements where traffic is higher and custom more profitable. The current practice of market building and rehabilitation needs to be questioned and re-oriented to better address the needs of fish sellers (semi-hard materials, simpler structures in areas of high traffic could be considered, for example).

## Secondary interventions

### ➤ **Increasing the participation of women in Community Fishing Councils (CCPs)**

#### ***Preferential target groups: individual female boat owners and female fish traders***<sup>56</sup>

Women boat owners and especially women fish traders, have an important stake in the management decisions of the CCPs. This, since the decisions influence directly on their activities in fishing and fish trade. IDPPE at Provincial and District levels should therefore encourage women traders to partake in CCPs on a more systematic basis, as well as assist members in making time for joint meetings, and raise awareness among existing members of the importance of the benefits of mixed membership.

### ➤ **Advertising and promoting the benefits of fish consumption**

#### ***Preferential target groups: women selling fish around rural villages (basket women)***

<sup>57</sup>

Annual per capita consumption of fish in Mozambique is low compared to the average for developing countries. However, it is difficult to state exactly the fish consumption as statistics range from 5 to 10.5 kg per capita per year. Mozambique is among the countries where child underweight prevalence is lower than 20 per cent, while stunting prevalence remains above 40 per cent. Experts agree that consumption of fish, particularly oily fish, is essential for the optimal development of the brain and neural system of children. A recent FAO/WHO expert consultation (2011)<sup>58</sup> concluded that fish consumption lowers the risk of women giving birth to children with suboptimal development of the brain and neural system compared with women not eating fish. Given the importance this may bear on future generations and the need to act quickly, women fish vendors walking to villages or selling fish in their own villages can be used as vectors of information on nutrition. As an integral part of their business, they could advocate for the benefits of fish consumption for children and pregnant women. This has been done in other countries like Kenya. Training of women fish sellers on these matters would be easier if they were organised and could be targeted jointly.

### ➤ **Creation of an inter-institutional “platform” to strengthen knowledge sharing and coordinated actions**<sup>59</sup>

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<sup>56</sup> indicated as [1B] in Figure 3

<sup>57</sup> indicated as [3B] in Figure 3

<sup>58</sup> FAO/WHO, 2011.

<sup>59</sup> [7A in Figure 3]

***Preferential target groups: current institutional stakeholders at Provincial and District levels who support the aquaculture and capture value chains***

This was also suggested under the aquaculture interventions (Section 2.3.2). IDPPE's involvement was mentioned and should be fully integrated into this platform.

Together, these activities could both minimize post-harvest losses and inefficiencies, and increase the availability of good quality fish to consumers in rural areas. Nonetheless, it will be essential to ensure that if these interventions are retained in a pilot project, they should not duplicate, but be coherent with the interventions of the ProPESCA programme.

### 3. Next steps: Pilot project development

#### 3.1 Pilot project focus

The range of interventions to be carried out under the pilot project should remain broad. Some of the interventions suggested are close to farmer-led 'trials' (e.g. fry to fingerling, fish feed and fertiliser production). Others relate, directly and indirectly, to capacity building (e.g. providing the means to build capacity, at both trainers' levels through the provision of means of transport for example, and at trainees' levels, with for example training delivered on location to enhance women's attendance. Others are directly 'developmental' in nature, for example the construction of basic market facilities for women fish traders. Actually, on the basis of the mission findings, including post-field visit discussions with key stakeholders during the de-briefing, and in light of the on-going and planned interventions of the ProPESCA project in the post-harvest and trade of capture fisheries products, it is suggested that the pilot project should focus its activities on small-scale aquaculture only.

If this suggestion is followed, it will be nonetheless important to ensure that lessons from the actions related to improvements for women fish traders under the ProPESCA project are learnt and used to develop the post-harvest section of the aquaculture value chain, either within the remit of the pilot project, or in a follow-up phase.

Synergies between activities within fishing and aquaculture in Gaza should be explored and developed: This in order to allow for sharing of organizational capabilities. IDPPE could for example train aquaculture associations in matters related to association, savings, and business management.

The pilot project will have a strong gender component. It should therefore be coordinated and aligned with pre-set strategic approaches to gender in the fishery and aquaculture-sector.

A condition for the design and implementation of the activities that goes without saying is a careful consideration of women's needs, desires and constraints. Some of the proposed interventions are more geared towards contributing to women's empowerment, and target women specifically. Others are more geared towards strengthening the status of aquaculture producers in general, regardless of their sex, on the basis that both men and women are already deeply involved and benefitting equally from their participation in aquaculture. This does not mean that this situation is fixed, nor does it preclude efforts to maintain this balance.

#### 3.2 Pilot project development process

The pilot project development process is in the hands of the Ministry of Fisheries and its subsidiary bodies. An iterative consultation process should be established to discuss the suggestions for interventions provided in this report, and select and refine them prior to their inclusion in the pilot project. What this would entail and who should be responsible is recommended in Table 1.

Table 1: Proposed sequential steps for the development of the pilot project and responsibilities.

<b>Sequential steps</b>	<b>Responsibilities</b>
<b>Agreeing on the scope of the pilot project (i.e. aquaculture, or capture fisheries, or both)</b>	Ministry of Fisheries, INAQUA, IDPPE (central level)
<b>Pre-selecting the suggested interventions deemed most relevant</b>	Ministry of Fisheries, INAQUA, IDPPE, FFP (central level)
<b>Discussing and refining this pre-selection at Provincial and District levels</b>	Provincial Directorates of Fisheries, INAQUA, IDPPE, FFP (provincial level), Gender focal points
<b>Identifying possible target groups</b>	INAQUA, IDPPE, SDAE, FFP (provincial and district levels), Gender focal points
<b>Discussing pre-selected interventions with target groups in fishers/aquaculture operators' communities</b>	INAQUA, IDPPE, SDAE, FFP (provincial level), existing and potential individual producers and producers' associations, Gender focal points
<b>Commissioning complementary acceptability and feasibility studies (e.g. for fish feed/fertilisation and fry to fingerling production)</b>	Local consultant or MoF staff, INAQUA, IDPPE, existing and potential individual producers and producers' associations, Gender focal points
<b>Finalising the selection of interventions</b>	INAQUA, IDPPE, SDAE, FFP (provincial and central levels), Gender focal points
<b>Preparing the pilot project document</b>	Ministry of Fisheries, Provincial Directorates of Fisheries, INAQUA, IDPPE, Gender focal points

The pilot project could be formulated during the rest of 2014, starting in January 2015 and ending in mid-2017 (2.5 years as total duration). Results obtained in the last year of the project implementation could inform the next Fisheries Master Plan. Reciprocally, Results from INAQUA's two-year plan for small-scale aquaculture "*massificação*" (2012-2014) could in return and planning of the next plan will make it possible to fine-tune the suggested interventions and ensure their complementarity and synergy with the Government's efforts.

A total of approximately US\$800,000 for the period 2013-2017 has been earmarked for the pilot project in the Norway-Iceland Common Fund programme of cooperation on fisheries with the Government of Mozambique. The largest amounts are allocated for years 2015 (225K) and 2016 (200K). It is difficult to estimate precisely the costs of the interventions suggested. However, realistically, the available budget may not be sufficient to cover *all* of the proposed interventions. The pilot nature of the project would warrant focusing on selected interventions but prioritisation of activities should remain the responsibility of the Ministry of Fisheries. Purchase of a vehicle, equipment and support staff time for the duration of the project will be indispensable expenses.

An additional small amount of funding from the "Women's Rights and Gender Equality" initiative of the Norwegian Ministry of Foreign Affairs may also be made available for targeted catalytic activities within the pilot project. These funds could for example cover the feasibility/demonstration phase of small-scale feed formulation intervention.

A backstopping partner could be used to assist the Government of Mozambique in its overseeing of the implementation of the pilot project, using a similar model of assistance as the one deployed in the context of energy<sup>60</sup>. In close cooperation with the Royal Norwegian Embassy, ICEIDA and the Ministry of Fisheries, support could be provided either on an ad-hoc or on continuous basis. Building internal capacity of implementing administrations (INAQUA and IDPPE) and target groups through transfer of skills (training and technical advice).

The challenge will be to find a backstopping partner organisation with expertise in both fisheries/aquaculture and gender issues, as well as knowledge of Mozambique or at least Africa. Organisations tend to deal with fisheries and aquaculture separately, which may call for support agreements to be sought with two separate organisations in case it is decided to cover both capture and aquaculture interventions in the pilot. It will be important to ensure that gender aspects is not side-tracked, if the organisation that is chosen mainly is a technical organisation. We suggest some possible organisations in Table 2, with an outline of their expertise.

Gender focal points at central and provincial levels should be fully involved in the elaboration of the pilot project document. They should also play a pivotal role in the implementation of the project activities. Gender focal points are, to some extent, less aware than their technical counterparts, of field realities of aquaculture development and small-scale fisheries at district level. However, the implementation of the pilot project offers an opportunity for the affirmation and visibility of the gender focal point's role. It will be essential that someone with specific gender awareness ensures the gender sensitiveness of planned technical activities. The inputs of gender focal points in the project, in terms of oversight of activities and guidance, but also progressive questioning of traditional gender inequalities among farmers (males and females) and project staff alike, should be considered as important as the technical know-how provided by the technicians.

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<sup>60</sup> Technical Assistance to Support Gender Mainstreaming (GM) in Energy Sector Cooperation in Mozambique.

**Table 2: Possible organisations, with their expertise, to backstop the implementation of the pilot project (non-exhaustive list).**

Organisation and mandate	Capture fisheries expertise	Aquaculture expertise	Gender expertise	Geographic expertise
<p>International Collective in the Support of Fishworkers (ICSF)  <a href="http://www.icsf.net/index.php">http://www.icsf.net/index.php</a>                      International non-governmental organization that works towards the establishment of equitable, gender-just, self-reliant and sustainable fisheries, particularly in the small-scale, artisanal sector.</p>	☐	☐	☐	Africa Mozambique
<p>World Forum of Fish Harvesters and Fish Workers (WFF)  <a href="http://www.worldfisherforum.org">http://www.worldfisherforum.org</a>                      International organisation that brings together small scale fisher organizations for the establishment and upholding of fundamental human rights, social justice and culture of artisanal /small scale fish harvesters and fish workers</p>	☐	☐	☐	Africa Uganda
<p>Aquaculture without Frontiers (Aw/oF)  <a href="http://www.aquaculturewithoutfrontiers.org/">http://www.aquaculturewithoutfrontiers.org/</a>                      Independent non-profit organisation that promotes and supports responsible and sustainable aquaculture in the alleviation of poverty by improving livelihoods in developing countries.</p>	☐	☐ (freshwater)	☑	Africa Kenya
<p>Blue Ventures  <a href="http://www.blueventures.org">http://www.blueventures.org</a>                      Science-led social enterprise that works with coastal communities to develop transformative approaches for nurturing and sustaining locally led marine conservation.</p>	☐	☐ (marine)	☐	Africa Madagascar
<p>The Royal Norwegian Society for Development(*)  <a href="http://www.norgesvel.no">http://www.norgesvel.no</a>                      Independent organisation, using commercial development for realising the vision of sustainable local communities.</p>	☐	☐ (freshwater)	<b>Limited</b>	Africa Madagascar

(\*) Suggested by Mr. Morten Frost Hoyum, from Frost Innovation AS, currently involved in the design and construction of the CEPAC for training and fingerling production.

In a project of this nature, where particular emphasis is placed on women's opportunities and benefits and on gender equality, monitoring and evaluation of the project impacts, and the social changes these will entail, will be important. Outcome mapping is a form of monitoring and evaluation (M&E) that lends itself better to such a task than other conventional forms of M&E such as logical frameworks. This form of M&E would be very well suited to the M&E of the pilot project because it is amenable to encompass gender issues and assess changes in attitudes towards gender stereotypes. Instead of focusing on

deliverables and their effects on primary beneficiaries, outcome mapping focuses on behavioural change exhibited by secondary beneficiaries, in the belief that these will lead to long-term changes and positive outcomes beyond the actual life of the project. A fiche on what outcome mapping is and some references for further information are provided in Appendix 4.

## **4. Conclusion: further thoughts on the implementation of the MoF's Gender Strategy**

With the elaboration of its Gender Strategy<sup>61</sup> and the nomination of Gender Focal Points, the Ministry of Fisheries is explicitly demonstrating its commitment to gender equality in the fisheries sector – something that places it well in advance of many other parts of the world.

The interventions of the pilot project will contribute to the implementation of the actions of the Gender Strategy contained under its strategic objectives 8.2.1 (Strengthening the capacity of women in the capture and aquaculture value chains) and 8.2.2 (Strengthening financial and market services access and control for women). Given that the terms of the actions of the Gender Strategy are quite broad, interventions of the pilot project will act towards their implementation. For example, in the case of aquaculture, proposed interventions on feed and fingerlings could fall under the “strengthening technical assistance, particularly to women, involved in fishing and aquaculture activities” action of Objective 8.2.1. The pilot project should therefore be designed to ensure that its interventions fall in the remit of some – as many as possible, but not necessarily all – of the actions of the Gender Strategy. Reciprocally, the actions of the Gender Strategy provide the framework against which the results and impacts of the pilot project could be monitored and evaluated.

The Ministry of Fisheries, but in particular INAQUA and/or IDPPE, have an important stake in the design, implementation and ultimately, success of the pilot project. Within these institutions however, the role of the Gender Focal Points will be very important: they should be present at all stages of the design and be given specific responsibilities in the implementation and overseeing of the proposed interventions. Their specific awareness of gender issues, at all levels, should be used to guide the shape of interventions. They should provide advice and their expertise in decisions related to the choice of target groups for the project. They should also assess the appropriateness of equipment supplied and sensitivity of technical advice (e.g. equipment not too heavy, slightly smaller or shallower ponds that could be harvested more easily), as well as the delivery of training (e.g. duration, location, recruitment of a child minder to increase women's attendance).

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<sup>61</sup> Estratégia de Género do Sector das Pescas (EGSP).

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## Appendices

### Appendix 1

#### Organisation and methodology of the mission

The mission comprised two phases: institutional and field information collection.

#### Stakeholders met

At central level, briefing and de-briefing meetings were held with the Royal Norwegian Embassy personnel, the Gender Focal Point of the Ministry of Fisheries, personnel of INAQUA and IDPPE. Information was also collected from the personnel of FFP, and from the Norwegian consultants supporting INAQUA in the construction of the Chókwé Mapapa fingerling production and training centre (CEPAQ) <sup>62</sup>. In Gaza Province, the director of the Provincial Directorate for Fisheries, of the ISPG and personnel of SDAE and IDPPE delegation were met. These meetings made it possible to understand the role, functioning and intention of each of these stakeholders, as well as clarify and validate our understanding of the situation regarding fisheries and aquaculture development in the country.

Key actors of the capture and aquaculture value chains – men and/or women from fishers, traders, fish farmers, CCP and PCR groups – were met and interviewed in coastal and inland communities of Gaza Province. The fieldtrip itinerary, agenda for the overall mission and list of institutional stakeholders met is provided in Appendix 2.

#### Methodological approach for field information collection

##### **Agency as the overall framework of analysis**

Agency - the process through which women and men are considered as agents of change who use their endowments and capabilities to take advantage of economic opportunities and achieve their desired outcomes<sup>63</sup> - was used as a conceptual framework to design the fieldwork and enquiry process. By looking beyond the simple description of gender roles and divisions, an agency perspective on prevailing gender issues can shed light into the nature and magnitude of the social, economic, cultural and institutional barriers to the benefits women may gain from their participation in fish value chains. Thus, this framework can also help identify the institutional and market mechanisms that need to be addressed or challenged, and those that need to be promoted to unlock women's economic opportunities and entrepreneurship in the fisheries and aquaculture sectors and remove barriers to their empowerment.

##### **Pro-poor and gender-sensitive value chain analysis**

Value chain analysis was developed as a means to identify bottlenecks and inefficiencies in the supply chains of commercial commodities between producers and consumers. It has evolved as a generic method to identify winners and losers and intervention strategies for effective product upgrading and pro-poor growth. Value chains

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<sup>62</sup> Via a Skype call, upon return from the mission.

<sup>63</sup> World Bank 2012, Sen 1999.

development interventions can open up opportunities for women's empowerment. However, if insensitive to their practical and strategic needs, they can further threaten their vulnerable status and aggravate gender stereotypes and power inequalities amongst chain actors<sup>64</sup>. Applying a gender "lens" to the study of value chains makes it possible to describe the roles and positions of women and men along the chain. It also allows analysts to identify points where non-market factors and power relations weaken women's benefits and status. Understanding the reasons behind these issues is essential not only for gender equality, but also for designing effective sustainable pro-poor growth and development strategies<sup>65</sup>.

Based on these concepts, the methodology implemented involved:

### **Value chain mapping**

Aquaculture and capture fisheries value chains were respectively drafted with INAQUA and IDPPE on the basis of information collected during briefing meetings at the start of the mission. These maps were then used to support discussions with interviewed value chain actors (men and women fish farmers, fishers, traders, sellers, transformers, providers of inputs, credit etc.) and to understand women's roles in the capture and aquaculture value chains and the benefits drawn from their participation in these.

### **Venn diagrams**

Venn diagrams enabled the study of the perceived importance of institutions supporting the capture and aquaculture value chains, and were discussed with gender relations in mind. Either made of paper or drawn on the ground, diagrams made it possible to discuss the role, membership and influence that local institutions have on the activities of the men and women involved in the value chains. The diagrams also highlighted the linkages and degree of exposure of men and women to contacts with governmental and nongovernmental organisations. This provided an indication of their differential access to services (credit, extension, improved technologies, etc.) and their degree of participation in decision-making in relation to fisheries/aquaculture development. Potential sources of conflicts as well as cooperation among groups were also discussed.

Indirect, open-ended questioning was used to investigate the strength of individual relationships and influence among key value chain actors such as, for example, fishers-traders. What could be done to change prevailing situations, in particular with regard to the role of women, was also touched upon during the discussions with the participants (both men and women).

Groups of people met and interviewed were split according to their gender when this was deemed necessary (for example men and women members of associations). However the split naturally occurred due to the dominance of men in some groups (e.g. CCPs) and women in others (e.g. PCRs), although these were also kept mixed if circumstances so dictated.

The narratives from the interviews and meetings held and which enabled us to understand the value chains and the role of women in these, as well as identify gaps and disadvantaged groups, are provided in Appendix 3.

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<sup>64</sup> FAO et al., 2010

<sup>65</sup> Mayoux and Mackie, 2008

### **Other considerations**

The “starting point” of the capture fisheries value chain was carefully considered. The uneven distribution of benefits among stakeholders resulting from locally-implemented co-management measures has been documented<sup>66</sup>. For this reason, CCPs were included in the value chain analysis and its members met and interviewed.

“Innovation systems” are understood broadly as information and communication technologies (e.g. mobile phones). They also include group structures with similar interests (e.g. for resource management, savings and credit, post-harvest, collective action) organized at various points along a product value chain. Both forms of innovation systems are increasingly promoted to enhance fish quality and value. However, they are not gender-neutral and their benefits for women are not systematic<sup>67</sup>. Particular attention was therefore paid to the role and use of these technologies and structures by male and female actors of the fish value chains.

The prevalence of HIV/AIDS amongst young women<sup>68</sup> and the impacts of climate change on fish production and livelihoods were additional threats to the fisheries and aquaculture sector in Gaza Province. These threats have a particular incidence on gender relations and had to be born in mind throughout the mission.

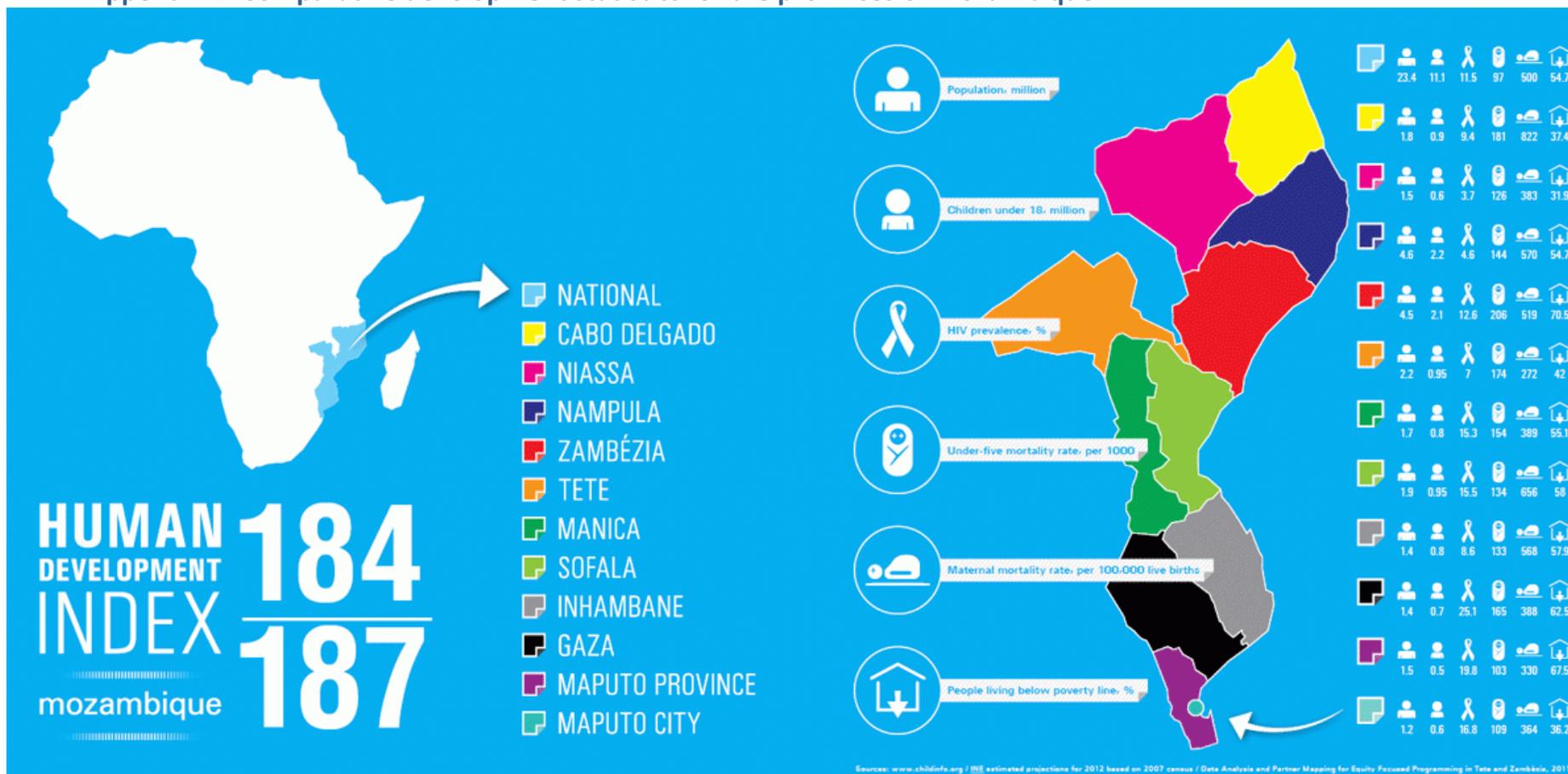
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<sup>66</sup> Menezes et al., 2011

<sup>67</sup> Nyikahadzoi, et al. 2012, Douthwaite, et al. 2013

<sup>68</sup> The overall HIV/AIDS adult prevalence rate was 16.2% in 2004, of whom 58% were women, with the central and southern regions having the highest rates. In 2005, 22% of women aged 20-24 were living with HIV/AIDS (7% for men) (Republic of Mozambique-European Community, 2007).

## Appendix 2: Comparative development statistics for the provinces of Mozambique.



Source: UNICEF Annual Report 2012.

### Appendix 3: People met during the mission.

#### CONTACTS – Fact Finding Mission on Woman and Fisheries/Aquaculture in Mozambique (people met are indicated in bold)

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## Appendix 4: Value chains narratives, Gaza Province

### Aquaculture value chain narratives and case studies

What follows is a detailed description of the key stages of the aquaculture value chain in Gaza Province, based on the data and information collected by the fact-finding mission during the field visit. Illustrative case studies provide complementary information at the end of this section.

The value chain for aquaculture production in Gaza Province is currently fairly simple and short, i.e. with a limited number of actors. This is because the sector is still in its infancy and therefore under a process of organisation and development, and because quantities so far produced have been small and have only been commercialised close to the centres of production.

Construction of tanks by INAQUA has progressed rapidly over the last few years, from 4 tanks in 2008, to 120 in 2011, to 220 in 2014. Recommended size of tanks is 300m<sup>3</sup>, but this can vary (smaller) depending on location and facilities.

Currently, there are more women than men producing fish from aquaculture.

### Overview of the supply chain

#### 1. Fingerling supply

There are currently two ways of obtaining fingerlings: 1. From a South African producer based in Vilanculos (Inhambane Province), about 800km north of Xai-Xai. INAQUA sources its fry there before distributing them to the producers under their assistance. Vilanculos fingerlings are sold at 2.5MTZ each to individual producers, and at 3MTZ each when purchased by INAQUA. 2. By collection of wild fry in local rivers and water bodies. A farmer is currently experimenting with breeding (Chidenguele cages) but has so far only set aside some breeders.

#### 2. Production

There are different categories of producers: individual aquaculture entrepreneurs, associations of producers. Among the individual entrepreneurs, two sub-categories can be considered: a more business-oriented, intensive form of production (e.g. cages in Chidenguele), and a smaller-scale, extensive but well-organised form of production (e.g. tanks in Nhancutse). While the former is a young male entrepreneur, the latter is led by a woman. Both enterprises have locally-hired full-time employee(s).

There are also associations of aquaculture producers. These are extensive tank operations. Associations were created through the intervention of a project/NGO (e.g. Hunger Project in Zuza, World Vision in Bilene) or after mobilisation by the SDAE. In Zuza, the group is an informal association, in other locations (e.g. Bilene), the associations are officially-registered. Members of associations are predominantly women, who have received land from the village head for building tanks, and assistance with their construction and stocking from INAQUA or the NGO. Some tanks are individually owned but their management is shared among the group members. Members are encouraged to

dig their own tanks. In Zuza, seven out of the 12 association members own a pond (3 men and 4 women).

Only a few cycles have so far been completed and consequently, quantities harvested are still small (e.g. 4 tonnes from Chidenguele cages, 45kg from Zuza associations). Larger fish are also harvested on an ad-hoc basis when they are considered large enough for consumption or commercialisation (e.g. tanks in Nhancutse).

### **3. Commercialisation and consumption**

In all cases, the post-harvest to consumption chain involves only one actor: either the producer who supplies directly to restaurants, hotels nearby or in Xai-Xai (e.g. cage production from Chidenguele); or customers from the village nearby who purchase fish at the tank site (e.g. association in Zuza, or lady producer in Nhancutse). Information about the harvest and sale of fish is communicated via mobile phone by the producer to individual members of his/her network of contacts and acquaintances. The fish is sold and consumed fresh. It is carried in buckets or transported in ice when a longer distance needs to be travelled. Larger fish (from cage production) are sold preferably to hotels and restaurants, whereas smaller fish is consumed by local villagers.

→ Post-harvest trade and sale of farmed fish is currently a “black hole” that remains to be filled and organised as production increases to ensure the fish produced meets both the protein needs of local poor households and demand for fish further afield.

### **Overview of support to the supply chain and bottlenecks**

#### **Feed**

Feed can be imported from South Africa (e.g. Chidenguele cages) at a cost of 45Met/kg (excluding transport). This makes the purchase of compounded feed out of the reach of all other producers. Consequently, all other producers rely on on-farm ingredients to feed their fish. This leads to uneven, and often disappointing, growth rates. In Nhancutse, the woman entrepreneur dries unsold fish and pounds it to add to her feed mixture.

Feed availability was repeatedly mentioned as a critical bottleneck in the development of aquaculture production.

#### **INAQUA**

INAQUA supplies fingerlings (bought from Vilanculos) free of charge for two cycles to individual producers who have been selected for demonstration as well as to associations of producers starting aquaculture. INAQUA also provides advice regarding tank construction, feed manufacture with farm ingredients, stocking and overall tank management.

However, the fact that there is only one qualified and experienced aquaculture technician for extension in the entire Province is a very serious constraint.

#### **Associations/producers' groups**

The association met (Zuza) was an informal group of producers. Its informal status was hampering its good functioning (internal governance and support to its members, in particular with regard to applying for funds). A number of other producers' associations have been created, as a joint effort between INAQUA and the SDAE, and sometimes a NGO. Members of these groups are relatively old, and often are illiterate. Members are selected on the basis of the location of activities, including communal activities such as *machamba*

cultivation. Those with some education are usually elected to leadership positions (president or treasurer).

Members normally meet when they have a work to do in the tanks, on the basis of a rotation for daily management tasks and presence at the tanks. Membership is not closed: it is possible for other women to enter the group provided they have similar activities and interest in aquaculture. INAQUA encourages each member of the association to have their own tank without needing to leave the group, provided that they can do all the activity without prejudice to their duties.

### **Sources of finance, credit and savings groups**

Aquaculture producers are often members of a local PCR group. There were 11 such PCR groups in the village of Zuza to which most members belong. Regrettably, credit that can be obtained from the groups was deemed insufficient to open a pond, which meant that entrepreneurship was constrained, since no other easily accessible sources of funding are available. IDPPE assists approximately 50 PCR groups in Gaza.

With his cage culture pilot project, the young cage producer had managed to secure funds from FNI (Fundo Nacional de Investigaç o). This is simply a one-off and would not be sufficient to support the wider replication of the operation.

Interestingly, the FFP was not mentioned. Interviewees were not aware of this source of funding for aquaculture.

## Case study notes - Aquaculture

### Case study 1:

#### Visit to Zuza aquaculture producers' association

Zuza village in Chissano district has approximately 4000 inhabitants. It is a poor and traditional village. Most people in the village have relatives working in South Africa. The village was selected by the Hunger project for an intervention on food security. There are problems with food two months per year. Many villagers lack access to food for longer than two months. All villagers live from agriculture. Access to land is not a problem. The village is prone to floods.

The Hunger project was given land for pond construction by the village head. Women from female-headed households were selected for preference to participate in the project. An association of 12 members (9 women from female-headed households and 3 men) was formed in 2009. The women were selected for leadership positions in the group. Vegetable gardening was also promoted and a health centre was built as part of the Hunger project intervention. There are also credit-saving schemes in the village.



The Hunger project supplied 1000 tilapia fingerlings. The demonstration pond was last stocked in November 2013. Harvest is planned to take place on the 7th of April 2014 (5 months after stocking). Fish are fed three times a day.

The pond first stocked yielded only 45 kg of small-sized fish, after an 8-month culture period (this pond, which is fenced, is now in a poor condition - photo). As a consequence, association members would like to use monosex tilapia, or change species.

#### Interview with two female members of the association.

The women built the tanks for aquaculture themselves in 2010. They hired men to help them. The hunger project provided funds for the first pond, thereafter they needed to pay. Each of the ponds (200-300m<sup>2</sup>) cost 5000 MTZ to build. The chief was active in mobilising people to assist in building the ponds. At present there are 7 ponds: ownership is individualized, and the three men in the association each have a pond, while the 4 other ponds belong to women. Both women interviewed came from female-headed households, but had children working in South Africa (they said that their children were not sending money home).



Women 1: She stocked her pond with 1000 fingerlings that were provided by the Hunger Project. She fed the fish morning and evening and had learnt how to make fish-feed from the Hunger project. The feed is made of rice bran and maize bran. She also feeds with leaves from cassava. After 8 months, the 45 kilos of harvested tilapia were sold for 30 MTZ per kilo. All the fish was sold locally in the village. Most people in the village buy fish two times a week.

The challenges they face relate to:

- Pond construction: the women need to build more ponds, but do not have the money to do so. They need five more ponds so all members of the association have one each. They also need fences around the ponds in order to prevent animals from drinking the water.- Access to fingerlings: the women do not know where to buy them when Hunger Project stops helping them.

## Meeting with 8 men from Zuza village, including 2 members of the producers' association



The association opened a bank account at the time of the first fish harvest. The account is in the name of three members of the association: 2 men and 1 woman. The money from the harvest has not been used.

At the time of this harvest, some of the fish was sold fresh to customers from the village. The rest was given away at the opening ceremony of the new health centre. For the next harvest however, they intend to keep some fish for their own consumption.

Regarding the hypothetical sale of fish when production increases: they intend to find transport to be able to transport fish to larger markets. They currently have the phone numbers of some fish traders. Larger fish will be kept for outside markets, whereas smaller fish will be sold locally.

Regarding the functioning of the association: the Vice-President and Secretary are women, the President and Treasurer are men. All were elected by the association members when the association was created, though no new elections have taken place since (6 years ago?). It was said that all members make decisions. Becoming a member of the association is free (no fee to be paid), but requires an "interview". Exiting the association is the same (no penalties).

Challenges for aquaculture include, according to them: lack of means of transport for fish, lack of equipment for fishing fish out of ponds, not enough training. Respondents were also very concerned about agricultural matters (e.g. not having a tractor or market outlay for agricultural products) and this concern seemed to override their concerns about aquaculture.

There are two PCR groups in the village (created by the Hunger project), with members also belonging to the aquaculture association. In addition IDPPE assists 9 PCR groups in Zuza.

They indicated that the returns from PCRs were not sufficient: only 2-10000MTZ can be accessed for credit, when a minimum of 25000MTZ was deemed necessary for the construction of a pond (photo). Therefore, in order to invest in the construction of a pond, association members have to use their own funds (e.g. cattle).

Association members feel that the role of the association is positive, even when the number of privately-owned ponds increases.

They responded positively to the suggestion to formalise the association for it to become a recognised, legal entity (note however that the initial preference for women should be kept as the association develops).

## Case study 2:

### Visit to Mrs. Deolinda, individual pond owner, Nhancutze

Mrs. Deolinda started aquaculture in 2005 with her husband, after getting the idea from a program she saw on TV. They started with some small ponds. After a while they increased the size of the ponds. The first ponds were initially built with their own money. She received support from INAQUA in 2012 for extending the ponds. She has been allocated land but does not yet have her DUAT. Her husband is now away, working for the Ministry of Defense (she runs the household on her own). She currently has four ponds, of 1200m<sup>2</sup>, 350m<sup>2</sup>, 200m<sup>2</sup> and 300m<sup>2</sup>. They are filled by gravity, she has a source of water and a channel. She says she is the only woman in the province who engages in aquaculture alone, the rest are men.



She obtains her tilapia fingerlings from INAQUA free of charge. 1050 fingerlings are stocked per pond. She harvests them in one go when they are 100 -150 g. She would like to aim to harvest when they are 400g each but it is a challenge to get them bigger. She grades her fish according to their size in her different ponds. She has one male permanent employee full-time, and she hires three part-time seasonal male workers at busy times (photo). She feeds the fish herself. Availability of quality feed is a problem: she uses mashed maize, rice and on-farm grasses (dentillas?).

At harvest, fish is sold locally to customers who come to the pond – she calls them to inform them of the event. Fish sold is directly consumed, not resold by traders because there is not enough. The fish was sold at 100MTZ/kg. She dried the fish she did not manage to sell, pounded it and used it as fish-feed. She herself eats fish about 3 times a week: “adoro peixe”. She has started to keep a record of her operations. If she manages to increase her production, she will contact restaurants and people she knows in Xai Xai and Maputo.

She has problems with vandalism, often caused by local frustrated youngsters. On the positive side, she receives many visits from people who want to see her ponds and learn about aquaculture. She is keen to share her experience and help both men and women who are interested in aquaculture.

She has her machamba nearby her house, on which she employs seasonal workers. She likes both agriculture and aquaculture.



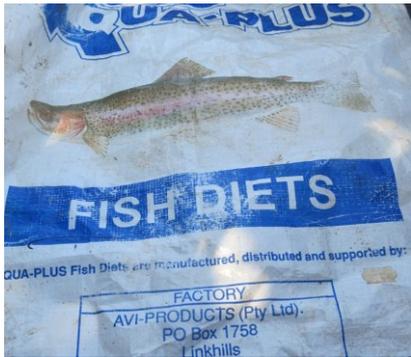
She has tried to participate in a PCR group, but has later quit because, according to her, the group was not serious. She would like to belong to a group if there was one nearby she could trust.

### Case study 3:

#### Visit to the cage operator, Chidenguele

He is 26 years old, and a graduate in Marine Biology. He was taught by people from Brazil and Thailand. He is also a university teacher (12 hours per week). He comes to his aquaculture production site twice a week. His objective is to develop a business.

At the moment, he has seven cages stocked with tilapia nilotica, which he prefers over other species. Cage material and equipment was sourced from Maputo. He got the fry from the



Vilanculos hatchery, which he purchased at 2.5MTZ/fry. Some 10,000 were stocked in each cage (3.5x2x1.5m). He imports the feed from South Africa, at 45MTZ/kg plus transport (he purchased 6 tonnes of feed in one go, at 25000MTZ, in order to minimize transport costs - photo). He estimates the food conversion ratio to be 1:1. The duration of a production cycle is about 6 months. He has observed a mortality of approximately 5% between fingerling to harvestable fish. He currently employs two people full time to carry out all jobs (except security). He pays them 3500MTZ/month, and lets them keep some fish

at harvest. Five other persons are occasionally employed. They are paid in cash and kind (fish). He has kept about 15kg of fish for himself from the previous cycle. He thinks fish culture is "easier in a cage".

He obtained permission to set up his cages in the lagoon from the Provincial Directorate for Fisheries (which includes INAQUA and IDPPE). It was free as it is still an experimental operation, but if he carries on he will have to look into obtaining permits.

Feeding is a big issue but he is not interested in producing his own feed, due to all the other management tasks he has to carry out. He has set aside some broodstock and will try breeding and to produce his own fry. He also thinks that lack of training in aquaculture is an important constraint.

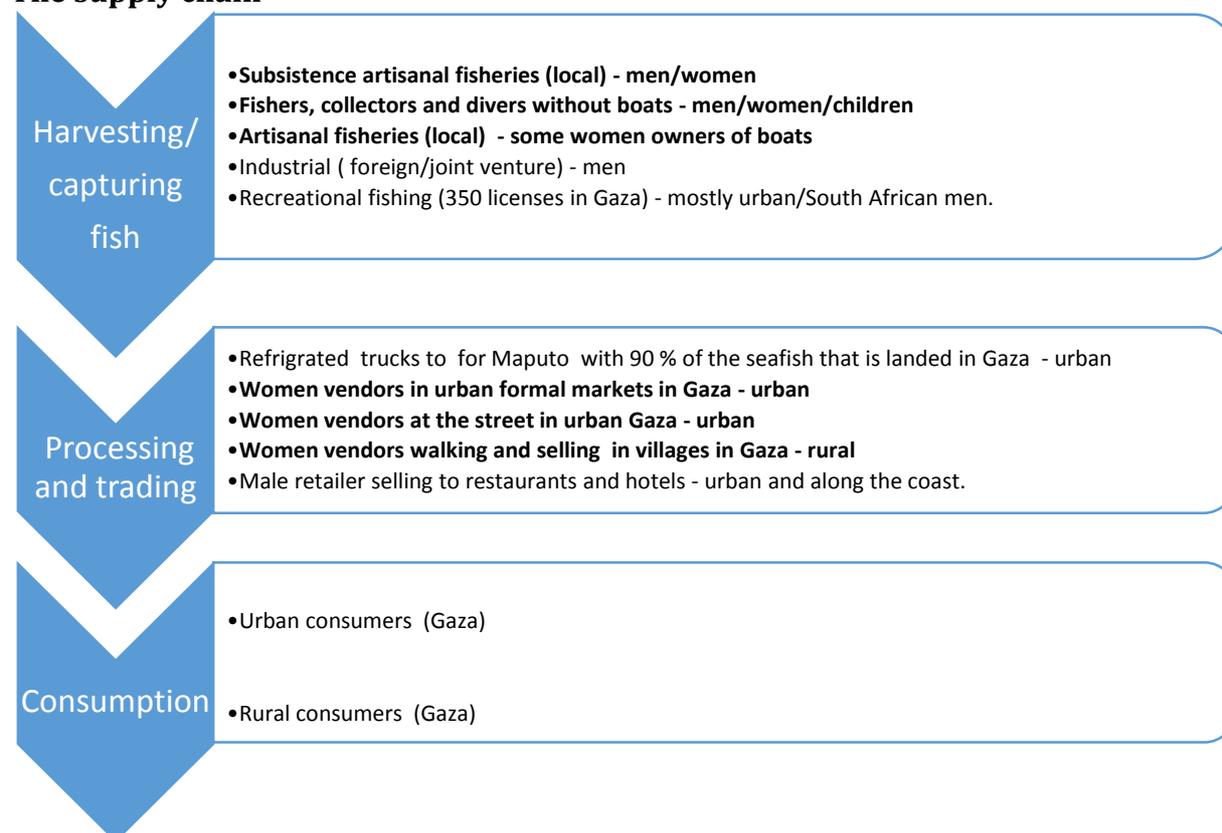
Cages are not guarded, but the hut where employees live is not very far away. He has already lost the contents of one cage to poaching, but has not experienced conflict with traditional fishing operations in the lagoon.

He has so far harvested 4 tonnes of fish, which he sold locally at 100MTZ/kg. His fish weighed 400g each on average. Although this is not very large, it is larger than the size of fish caught by fishers in the lagoon (50-100g), because the lagoon is over-exploited. He informs local villagers of the harvest date by phone and through word-of-mouth. People come with buckets and some ice to carry the fish. They purchase fish for their own consumption. Although larger fish is preferred, smaller fish is also consumed when there are many family members. He keeps large fish and sells them to local hotels and restaurants. He also takes them to Xai-Xai. There are no fish traders because if the resale price of fish is over 100MTZ/kg, it is too expensive to buy.

## Capture fisheries value chain narratives and case studies

What follows is a detailed description of key stages of the capture fisheries value chain in Gaza Province, based on the data and information collected by the fact-finding mission during its field visit to Gaza Province. Illustrative case studies provide complementary information at the end of this section.

### The supply chain



Note: only those items indicated in bold (above) are considered a prime concern from a poverty and food (in) security perspective.

### The harvesting/capture of fish and seafood

Ten thousand people work in the fishery sector in the province<sup>69</sup>. Men play a significant role in the harvesting and capturing of fish in Gaza. Small-scale fishing takes place both from shore and from canoes and dhow-type planked boats, mostly propelled by sails<sup>70</sup>, and almost exclusively in the inshore waters of 40m depth or less<sup>71</sup>. Fishers and collectors without boats are the poorest group among artisanal fishers. In the groups of collectors/gatherers, you will find women and children. The collection of marine products is for subsistence and sometimes for sale<sup>72</sup>.

Gaza also has six glass fibre boats with motors that can fish out on the open sea. The maintenance of these boats is however difficult, since the boats are not produced locally<sup>73</sup>.

<sup>69</sup> Personal information from the Director of the Provincial Fisheries Directorate, Gaza Province.

<sup>70</sup> Mngulwi, 2006

<sup>71</sup> UNEP, 2001

<sup>72</sup> Collection of shellfish and fish was not investigated during the field visit.

<sup>73</sup> Personal information from the Director of the Provincial Fisheries Directorate, Gaza Province.

The fishermen use beach seine, gillnet, trawl and long line to catch the fish. Beach seining is considered to be the fishery subsector that generates the largest number of direct and indirect jobs, and also lands the largest volume of catches. This sector has the greatest relevance for food security. However, we do not have statistics on the number of fishermen using this gear in Gaza.

Small boat owners usually employ crewmembers who they already know or who come from the community. In Gaza we learnt that boat owners might take up to 70 per cent of the catch when it was divided between the owner and three crewmembers. Some boats involve seven people in the fishing activity; here the boat owner may take a share of 50 per cent of the catch.

There are also women among boat-owners, employing crew. We did not get any figure for women's ownership of boats in Gaza, but at a fish centre in Maputo, we learnt that women owned 63 out of 352 boats owned by members of the centre. All artisanal fishery activities, except non-commercial subsistence activities, are subject to licensing. The fishing license is used as an instrument to collect fishing fees.

Since income depends on the region and subsequently distances to a major market, we would believe that the income in Gaza is higher than in other regions. However, the occurrence of fish along the coast varies. Income statistics from Inhambane and Sofala show **annual net incomes** as follows, depending on the district and status of fishers (men and women):

- Boat/gear owners – USD 1500 - 5100 (men/women)
- Independent fishers – USD 115 - 2900 (men)
- Divers/collectors – USD 2800 - 6800 (men/women)
- Crew – USD 50 -160 (men)
- Informal traders – USD 380 -1380 (women)<sup>74</sup>

It is maintained in literature on Mozambique's' fisheries that women are more involved in the fishery-sector in the southern districts than in the central and northern districts. This is linked to the high number of households with male migrants working in South Africa and where the households need extra income.

### **The management of the fishery:**

There are co-management arrangements at national, provincial, district and local level:

- **CAP** is a consultative body of the Fisheries Administration
- **CCG** at provincial level identify questions that need to be discussed in CAP. CCG identify and organize representatives of the artisanal fishers to present pertinent questions at CAP.
- **District Forum** that organises information to be conveyed to superior levels. Provides the connection and coordination between CCPs and the Government of the Districts.
- **CCPs** operate at community level. CCPs may have different rules and the CCPs decide on the entrance fee for fishermen/vendors who want to join. In some CCPs the fishermen are not allowed to sell fish to women they do not know. This co-

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<sup>74</sup> SAL-Consultoria em desenvolvimento Social ,LDA (2006) Specialist study.

management unit should implement actions, resolve conflicts; support activities of the Fishery Control Authorities, stop illegal fishing, control mesh-size; clamp down on drinking of alcohol, confiscate nets, look after safety concerns and provide the weather forecast, apart from addressing environmental issues like saving the mangrove.

The fact finding mission met with two CCPs. One in Maputo and one in Xai Xai.

In Maputo all members of the co-management group were boat owners, in addition there were some vendors in the group. In Maputo the CCP management committee had 14 members, including two women. In the fishing community outside Xai-Xai the CCP had more than 25 members, 18 men and 7 women. Four woman were boat owners. But although women fish traders had been invited to join the CCP, they were not participating.

### **Trading and processing**

In the colonial days the fish distribution network in Mozambique was heavily linked up to imported fish, like horse mackerel from Angola, and more informally to the little developed local fishery<sup>75</sup>. There are 1200 (2007) artisanal landing sites for fish along the coast, varying in size. In these landing sites, there are often small processing operations depending on traditional methods associated with the sites.

Wholesalers and retailers will buy their fish from fish centres in Gaza. The fish is sold fresh from the fishermen. In another fish centre where freshwater fish like tilapia are traded, the fishermen, their wives and women vendors cold-smoke the fish. Cold-smoked fish can last two days before it is spoiled.

In urban Bilene, there are six persons supplying ice to the fisheries sector. There is not much value addition in the supply chain, since most of the fish is sold fresh.

#### **a) Refrigerated trucks from Maputo – men**

The refrigerated trucks from Maputo buy 90 percent of the fish from Gaza, the Director of Fisheries told the team. When trucks buy larger quantities the prices are normally lower. Prices are usually negotiated via mobile phone.

#### **b) Vendors selling to hotels – men**

The vendors, often male, sell direct to hotels and restaurants. The reason offered for women not engaging in this type of sale was the language barrier (English not spoken) since many of the tourist businesses are run by South Africans. The fish is cleaned and prepared.

#### **c) Vendors selling in the formal urban markets – women**

Some women sell from marked-places in urban areas. In Bilene some women vendors of fish had built small stalls. They had diversified the assortment in their establishments. They served food and sold beer. Every day they paid 100 MTZ in tax to the head of the market. The women fish vendors in the formal urban marked in Bilene had freezers. After

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<sup>75</sup> Johnson V. Artisanal fishermen and intermediaries in Mozambique, 1992, Nordiske Afrikainstituttet.

buying the fish at the fish-centre they carried the fish back to the market place and froze it whole. This was the case if they did not manage to sell it directly to customers. Since they pay individually for electricity they need to sell the fish fast.

Some women in the more formal marked places said that they also operated as wholesalers and resold fish to women fish vendors who supplied villages with fish.

#### **d) Vendors selling in the informal urban market - women**

Despite Mozambique being a fish producing country, fish distribution in the country is very limited. The national distribution system for fish – especially fresh fish – is not well developed. Most of the fish harvested by artisanal fishers is distributed close to the landing sites, except for the fish bought by wholesalers with trucks from urban markets, like Maputo.

In Maputo the fact-finding mission interviewed **women wholesalers** located at the beach. They bought the fish directly from the fishermen for 1000 MTZ per box and resold it in smaller quantities (4 fish for 10 MTZ) to women vendors. Bilene fish centre was not visited, so no information about the negotiations is available for this area.

After buying the fish from fishermen, most women fish vendors will sell the fish from the roadside or pavements of dusty streets. Some sat the whole day in the sunshine, while others enter the streets after the formal market is closed. The women who start selling after the market is closed, start selling on the streets, thereafter they sell from door to door. Many of them have regular customers. One reason for selling in the evening is that they avoid being chased away by the police. During the day it is forbidden to walk around selling fish. Vendors selling at the side of the road during daytime pay from 10-20 MTZ in tax to the local council.

The fact-finding mission visited a newly built market place, where space had been allocated for fish vendors (Bela Rosa market). Unfortunately, no fish vendors used the place. This is also the case for market places built by ProPESCA. Since customers do not visit the market places for purchasing fish, women fish vendors do not use them. Women fish vendors favour areas with more traffic.





#### e) Vendors selling in villages – women

Despite Mozambique being a fish producing country, fish distribution in the country is very limited. The national distribution system for fish – especially fresh fish – is not well developed. Most of the fish harvested by artisanal fishers in Gaza is distributed close to the landing sites, except for the fish bought by bigger wholesalers with trucks from Maputo. The local fish markets are concentrated in more densely populated regions.

However, we heard about women selling fish in the villages. The role of these women is important for food security. These women walk many kilometres inland. Some of them have cold smoked the fish (tilapia) in order to avoid it spoiling. There are 300 villages in Gaza, but we do not know how many of these villages have access to fish. In order to extend the supply of fish inland in Gaza and reach new villages, this network of vendors could be strengthened. Women fish vendors walking to villages or selling fish in their own villages have been used to promote fish-eating in other countries, like Kenya.

#### Consumption

The apparent per capita consumption of fish is **4.6 kilograms** in Mozambique (Laurenti 2007), which is far below the average for developing countries (14.4 kg). The in-country variations are not reflected in the national averages, and fish consumption is considerably more important in some areas. Some countries have low underweight prevalence but unacceptably high stunting rates. Mozambique is among the countries where child underweight prevalence is lower than 20 per cent, while stunting prevalence remains above 40 per cent. Experts agree that consumption of fish, particularly oily fish, is essential for the optimal development of the brain and neural system of children. A recent FAO/WHO expert consultation concluded that fish in the diet lowers the risk of women giving birth to children with suboptimal development of the brain and neural system compared with women who do not eat fish.

**Case study notes – Capture fisheries**

**Case study 4:**

**Visit to Bilene fish traders, also members of a PCR group**

Fourteen female fish traders were interviewed in the market at Bilene. Most of them were 40+ and the majority from female-headed households. All of them had a large number of children/youngsters depending on them.

They do agricultural work (machamba cultivation) besides fish trading. They do not involve family members in the fish trade.

The fish caught out at sea is more expensive than the freshwater fish. Size, location of the catch and length of time the fish is kept in freezers influence its price (see table).

The fish caught out at sea is more expensive than the freshwater fish. Size, location of the catch and length of time the fish is kept in freezers influence its price (see table).

Catch location	Lagoon	Open sea
Purchase price from fishers	80-120 MTZ/kg	150 MTZ/kg
Resale price to customers in market	100-150 MTZ/kg	180-200 MTZ/kg



The traders line up at the beach and buy fish from fishermen before 10 o'clock in the morning. Traders do not have a designated fisherman from whom they obtain their fish. There is competition for a limited supply of fish, but traders help each other. They pay the fishers cash for the fish they buy from them. The price does not vary (see table) so negotiating is not needed.

The fish is carried in baskets to the market. There it is washed and frozen or sold fresh to customers. Freezers are individually owned. Freezers are kept in a place built for this purpose in the market. However, it is expensive to pay the electricity for the freezers so they try to sell their fish fast. In order to do this, they will accept a lower sale price for their fish. Since they always have to pay cash when they buy from the fishermen, they need to sell the fish in order to raise money to buy fish the next day.

The women traders with barracks in the market place usually diversify and start with small kiosks or restaurants in addition to selling fish. The women with barracks are the most formalized in the fish-trade and have more contact with government staff. They need to have a health certificate and they need a business licence. The women with barracks have to pay 100MTZ per day to the leader of the market place. Women traders, even those without shops in the market place in Bilene, usually have deep-freezers (photo).

Women traders without a barrack usually sit on the ground in the market place and outside on the street and sell, using plastic buckets and mats where the fish is displayed. The insects are wiped away and hygiene standards are poor. They need to pay 5 MTZ per day in tax to the municipality to be able to sell their fish this way.

Women traders keep some fish for their own consumption, about once or twice a week. They have good relationships with other female fish traders. They prefer to do fish trading than farming the land, which they perceive as more risky.

One woman said that she bought fish from the woman fish traders of Bilene and resold it in Maputo. Other women fish traders operate as wholesalers: they lower the price of their fish to 80MTZ/kg so that it can be purchased by women resellers and sold in remote villages for 85MTZ/kg. This happens in particular when the supply of fish is too large for the Bilene fish traders to handle. Fish from Bilene can be traded in a radius of 30 km from Bilene (up to Macia). On the other hand, women reported that selling fish outside Bilene was risky because fish spoils and villagers have little cash to buy fish. Therefore, women traders need to know who to go to when they sell fish outside Bilene. They also sell karapão imported from Angola (70MTZ/kg, frozen). Their best sale strategy is to have fish of various sizes. In smaller villages, people prefer smaller fish.

There are also women selling fish from door to door both in urban and rural areas (vendedores ambulantes). It is forbidden in urban areas to sell outside the market place. But after 5:00pm, officials are no longer working and the women can sell their fish. The mission was told that rural traders used to walk out of Bilene to sell the fish. One woman said that she walked 7-8 kilometers out of the town, went around selling and took a bus for 10 Mtz back to the town again in the late afternoon.

There are two PCR groups in Bilene. Money for the PCR is saved monthly over 12 months, then shared. It is not enough to start a good business. Money has to be repaid in 2-3 months. Some women traders have difficulty in saving every month. Rural, poorer traders tend not to belong to PCR groups.

A big challenge for PCR members is to achieve a regular, minimum saving each month. PCR rules, e.g. interest rate, are presented to members, though some can be modified. Those who can read and write usually take leadership positions within the group. The president, secretary and treasurer are elected every five years. Members have an advisory role for the type of investment that can be made with the PCR money. Any investment can be made as long as the risk of default is minimal. For fish traders, the PCR is useful to help them buy fish. For those who have a mixed trading business, it is also useful for buying other things than fish.



## Case study 5.

### Visit to a fishing village in Zongoene

The fishing village is located close to the Limpopo river mouth. Fishing takes place in a lake close to the village. There are 37 boats belonging to individual fishermen in the village. Every boat employs three fishermen in addition to the owner of the boat. When the catch is divided, the owner of the boat and net can take up to 70 percent of the catch.

#### Interview with male CCP members (fishermen)

Nine male members of the local CCP were interviewed (photo). All members are fishers. The CCP has been in existence for the last six years. The president, assistant leader, secretary, treasurer were “elected for life”. CCP meetings are not held regularly, only where there is an outside trigger. There is one woman in the CCP. Her husband was a fisherman, she is his widow. She has her own nets and asks for help to fish. Among the male members of the CCP, not all have boats. All have nets however and work with those who have boats. There are no other associations in the village.



On average, members of the CCP earn about 480MTZ/week. They have little education. At the creation of the CCP, each member paid 10MTZ as a contribution to the CCP fund. Most have since stopped contributing; only 2-3 members still give money. All men interviewed seemed overall quite disillusioned with the CCP, no longer seeing an advantage in their belonging to the group. The CCP was initially created to organize fishers as a unit in order to solve problems more easily, such as improved surveillance and control of the fishing activity. This is still

carrying on to this day. Yet other problems such as lack of extension support and lack of assistance (including financial) for the purchase of fishing equipment were not solved, which made them lose interest.

Women who trade fish in the village are members of the local PCR. However they are not members of the CCP. Although they were initially considered as potential CCP members, they have never attended any CCP meeting, and consequently were de-facto excluded. However, some men, including those who were interviewed, belong to both the CCP and the PCR. PCR funds are used to purchase nets. The men interviewed indicated that women fish traders would be welcome to the group, and that this would help them understand how fish prices are determined. However, finding a convenient time for both traders and fishers to meet during the day is very difficult: fishers go out fishing early morning, when they return, traders go out selling, etc. .

## Interview with female PCR members (fish traders)



In the village there are two PCR groups. One has 14 members (4 men and 10 women), the other 15 members (12 women and 3 men). The groups were formed by IDPPE with the assistance of the NGO Kulima. Eight women were met: three from female-headed households, three married to fishermen owning boats and two to men in other occupations. All the women are small-scale farmers. Four of the eight women are illiterate. They said that four women started up saving

after being mobilized. Those who entered the group later had to pay an additional 10 percent. All the members in the two groups know each other.

Many poorer women in the village are not members of groups. Some women are so poor that they cannot afford to save money and they do not want to be members. Poorer women were said not to understand that it is important to be members.

The women in the groups save from 50-500 MTZ per month. All the money is taken as credit. In December the women share the money that is left. The credit is used for buying fish that is traded. They are also using it to pay for school uniforms, fees and food.

Both women and men in the village smoke the tilapia. The fish is smoked for one to two hours. After that, the fish can last for 2-4 days (cold smoking). The fish is sold in a radius of 40 km. Many women in the village, who are not members of the group, run a business selling smoked tilapia. The women raise money for buying fish by selling pigs or goats. Some borrow money from friends and some even borrow money from members of the saving groups. The main problem for the small traders is lack of cash. Women without access to credit often use moneylenders. In this case, collateral is often land and/or other goods. The interest rate is between 10-20 percent and the loan needs repaying on a monthly basis.

The women are farmers and produce maize and cassava. They buy rice and sugar in the market. Women from poorer households need to buy smaller quantities, something that is more expensive. Women who are not so poor often pay poor women in sugar or rice to work on their agricultural land.

All the women in the group have a mobile phone. The phone is used to contact family. The women fish trader contacts the fisherman and her customers with the phone.

In some of the saving groups wives can face problems when their husbands know that they have money. The men can get aggressive and demand the money.

## Case study 6:

### Visits to fish markets (Chibuto, Xai-Xai)

The Government of Mozambique (through IDPPE) is building market places for small traders all over the country. The fish traders do not make much use of these markets for various reasons, the main one being that these infrastructures do not allow them to reach out to consumers. Usually the management of the markets is not working well and markets are not kept clean.

Interviewed female fish traders said that they had to pay to sit in the market and had to keep the market clean themselves. The district/municipality decides on the tax that women fish traders should pay. In Xai Xai the women traders paid 20 MTZ per day for sitting in the sand and sun by the roadside. The key is to keep the taxation at a level, which does not discourage continuation of, or reinvestment in, moneymaking sectors. Enclave production units, which have little or no interconnection to any local entity, will not help promote development. They will simply compete for resources (land in particular) while doing little else to raise welfare.

#### **Bela Rosa market, Chibuto**

At the market in Chibuto, the women fish traders sell freshwater fish from lake Chengani. The traders sit by the roadside (photo), even if there is a market place one block away from the main street. The women were younger than the traders selling marine fish in Bilene. The fishermen sell the catch to women traders and are paid at the end of the week. The risk of not being able to sell the fish rests with the young women traders. The fish that is not sold are spoilt and thrown away.



These women do not belong to any group and seem to lack information to do so. They do not have cool bags to keep the fish. They also lack wood and knowledge to smoke the fish. They pay 10 MTZ on a daily basis to the tax-collector (SDAE). The infrastructure is poor: the women sit on the roadside. Small fish is sold at 10MTZ/unit, medium at 20MTZ/unit and larger at 50MTZ/unit. The women cooperate with the women who buy from the same fishermen, but sell fish in the villages.

#### **The market in Xai Xai**



A 50-year old woman was interviewed. She has seven children and no husband. She usually pays 20 MTZ per day for sitting on the street (photo). The market place in Xai-Xai is a sandy street without shade. The fishermen sell the fish to her and she has to pay cash immediately. She does not belong to any group. She never sells marine fish because she cannot afford to. At the end of the day she buys ice. She sits there all the day. With the money she earns she buys food and other goods.

Another woman seller owns one boat and nets with her husband. Therefore, she does not pay for the fish she sells. Women traders tend to have their preferred customers (photo).

Women traders are not allowed to walk around to sell fish during daytime. However, when night comes, and the municipality police are no longer patrolling, they take to the streets of Xai-Xai and sell their fish on the pavement.

## Appendix 5: A “fiche” on outcome mapping, theory of change and monitoring and evaluation of gender mainstreaming and gender impacts.

To understand what outcome mapping is, it is necessary to first understand the concept of “Theory of Change” that underpins it.

*What is the Theory of Change?* It is defined and understood in a number of ways, but from an earlier conceptualization as “a theory of how and why an initiative works”, it is being understood as “a way to describe the set of assumptions that explains both the steps that lead to a long-term goal, and the connections between these activities and the outcomes of an intervention or programme” (Stein and Valters, 2012). This description is therefore based on a process of reflective analysis and critical thinking about the sequence of events that is expected to lead to a desired outcome (Vogel, 2012) – i.e. answering *how* and *why* things can be expected to happen.

*Why is the Theory of Change relevant to the M&E of gender mainstreaming and gender impacts?* The Theory of Change (ToC) is relevant to the M&E of gender mainstreaming and impacts for a number of reasons. The first is that achieving gender equality is itself grounded in a process of change, so in this instance, the ToC lends itself to the study, implementation and monitoring of that change. The second is that, although not new, it is increasingly promoted in the donor community as a progressive approach to embrace the complexity of change, to demonstrate how results can be achieved, and to promote locally/nationally-owned development. Third, because the reflection that underpins it is recognized as helping moving beyond “business as usual”, and develops a greater contextual awareness and clarity about the rationale, assumptions and long-term goals of a development programme (Vogel, 2012). Fourth, because gender is a cross-cutting and complex issue that is best captured through flexible, non-linear frameworks. Last, because it has been found to help with strategic planning (better design of interventions in relation to expected outcomes) and with M&E, allowing organisations to assess their contribution to change and to reassess their interventions (Stein and Valters, 2012).

*Why propose a M&E system based on this theory instead of one based on a conventional logical framework?* While logical frameworks (LF) graphically illustrate project components, linking activities, inputs and outcomes through an assumed link of causality, a ToC approach will actually articulate underlying assumptions about causality to explain how and why a desired change is expected to come about (Batchelor, 2010). Desired change is usually expressed as an “outcome”. Outcome mapping fits with the ToC process, recognizing complexity and a range of possible outcomes (through influence rather than control). Thus, it challenges the direct causality of LF, and of the M&E systems based upon this logic: it does not focus on measuring deliverables and their effects on primary beneficiaries but instead on behavioural change exhibited by secondary beneficiaries, in the belief that these will lead to long-term changes and positive outcomes beyond the actual life of the project (Earl et al., 2001).

*Three basic concepts of Outcome Mapping (OM).* The first key concept is that of “outcome”, as indicated above. By using outcome mapping, a programme is not claiming the achievement of development impacts; rather, the focus is on its contributions to outcomes. These outcomes, in turn, enhance the possibility of development impacts – but the relationship is not necessarily a direct one of cause and effect (ODI, 2009). A second key concept is that of “boundary partners” who are “those individuals, groups, or organisations with whom the [project] interacts directly and with whom [it] can anticipate opportunities for influence. These actors are called boundary partners because, even though the [project] will work with them to effect change, it does not control them. The power to influence development rests with them.” (Earl et al., 2001: 41). These people play an essential role in the flow of information and influence that leads to outcomes. “Progress markers” are the third key concept: they describe the behavioural changes or actions the project would like the boundary partners to exhibit by the end of the project. They are classified as “expect-to-see” (realistic and immediate response visible during the project life), “like-to-see” (ideal responses expected by the end of the project) and “love-to-see” (idealistic to unrealistic responses that could happen beyond the life of the project, and are beyond its “sphere of influence”, or control).

*Source:* adapted from BOBLME (2012) Mainstreaming gender in the BOBLME Project. BOBLME-2012-Socioec-02. URL: [www.boblme.org](http://www.boblme.org)

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### **Outcome mapping learning community:**

<http://www.outcomemapping.ca>

### **Other references on outcome mapping and its applications:**

<http://www.outcomemapping.ca/resource/index.php>

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