


# Marketing systems for fish from Lake Tana, Ethiopia: Opportunities for improved marketing and livelihoods

Improving Productivity and Market Success of Ethiopian Farmers





This working paper series has been established to share knowledge generated through Improving Productivity and Market Success (IPMS) of Ethiopian Farmers project with members of the research and development community in Ethiopia and beyond.


IPMS is a five year Project funded by the Canadian International Development Agency (CIDA) and implemented by the International Livestock Research Institute (ILRI) on behalf of the Ethiopian Ministry of Agriculture and Rural Development (MoARD).

Following the Government of Ethiopia's rural development and food security strategy, the IPMS project aims at contributing to market-oriented agricultural progress, as a means for achieving improved and sustainable livelihoods for the rural population. The project will contribute to this long-term goal by strengthening the effectiveness of the Government's efforts to transform agricultural production and productivity, and rural development in Ethiopia.

IPMS employs an innovation system approach (ISA) as a guiding principle in its research and development activities. Within the context of a market oriented agricultural development, this means bringing together the various public and private actors in the agricultural sector including producers, research, extension, education, agri-businesses, and service providers such as input suppliers and credit institutions. The objective is to increase access to relevant knowledge from multiple sources and use it for socio-economic progress. To enable this, the project is building innovative capacity of public and private partners in the process of planning, implementing and monitoring commodity based research and development programs.

Most of the project's activities are taking place in selected Pilot Learning *Woredas* (PLWs). The smallholder farmers and pastoralists in the PLWs are expected to increase market oriented production and productivity through the project's interventions during the project life. The project staff and partners will study this process through action research and learning. Some complementary focused studies are also undertaken by the project and its partners, which help to understand the context and determine key factors influencing the adoption and impact of the interventions. The results of all these studies and some important concepts, tools, methods and approaches developed will be published in the working paper series and will also be disseminated through other appropriate channels.

The intended users of the research outputs are government, non-governmental and private sector and donor organizations that are involved in market oriented development. They may use these learnings in their efforts to scale out this development process to other *woredas* in the country. Some lessons learned are also expected to be relevant for possible use in market orientated agricultural development efforts in similar contexts outside Ethiopia.



# Marketing systems for fish from Lake Tana, Ethiopia: Opportunities for marketing and livelihoods

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## Abbreviations and glossary of common terms

ARARI	Amhara Region Agricultural Research Institute
BoARD	Bureau of Agricultural and Rural Development
CBO	Community-based organization
CIDA	Canadian International Development Agency
CSA	Central Statistical Authority
EC	European Commission
FAO	Food and Agricultural Organization of the United Nations
FPME	Fish Production and Marketing Enterprise
GDP	Gross domestic product
HQ	Headquarters
IFPRI	International Food Policy Research Institute
ILRI	International Livestock Research Institute
IPMS	Improving Productivity and Market Success of Ethiopian farmers
JTH	Jigerfa Tekle Haimanot (a collection point on Lake Tana)
MoARD	Ministry of Agriculture and Rural Development
NGO	Non-governmental organization
PLW	Pilot learning <i>woreda</i> (of IPMS)
PRA	Participatory rural appraisal
t	tonne(s)
UNDP	United Nations Development Programme
WOARD	<i>Woreda</i> Office of Agricultural and Rural Development

Ethiopian birr (ETB)—unit of currency of Ethiopia; approximately ETB 8.7 = USD 1 in June 2006

*kebele* this is the sub-district administrative unit, akin to a parish

*tanqwa* this is the traditional reed-boat used in Ethiopia, usually made from papyrus (a more sturdy bamboo version is used on some of the southern lakes)

*woreda* this is the sub-regional administrative unit, akin to a district

Dates used in this report follow the Gregorian calendar. (The Ethiopian year starts in September. The year started in September 2006 was 1999 in Ethiopia.)

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# Executive summary

This report concerns the domestic trade in frozen fish sourced from Lake Tana in Ethiopia. It has been prepared for the Improving Productivity and Market Success (IPMS) of Ethiopian farmers project implemented by the International Livestock Research Institute (ILRI) on behalf of the Ministry of Agriculture and Rural Development (MoARD) of Ethiopia. The project seeks to contribute to the commercial transformation of subsistence agriculture through improved consideration of marketing opportunities and constraints. The field work was undertaken in June 2006 by a team comprising representatives of the Fisheries Research Unit of the Amhara Region Agricultural Research Institute (ARARI) on Lake Tana, Fogera *Woreda* Office for Agricultural and Rural Development (WOARD) and the WorldFish Center.

The Ethiopian market for frozen fish is small but growing rapidly. The market for frozen fish is heavily concentrated in Addis Ababa and urban areas in the production zones. Day-to-day and seasonal variations are extremely marked, reflecting uneven supply patterns and high demand on Christian fasting days and months. The main products are frozen fillets of tilapia, Nile perch, catfish and barbus. Under relatively conservative assumptions, aggregate demand for fish could be expected to grow by around 44% over the next 10 years. Historically, Addis Ababa has been supplied from the lakes in the south of the country. There is, however, a widely-held view that these lakes are now over-fished and market participants report growing difficulty in sourcing fish in the last 2–5 years, suggesting that demand is now growing faster than supply.

Lake Tana's importance in this trade is growing but a number of constraints were noted, including:

- Lake Tana fish is relatively expensive compared to other sources of fish
- limited lakeside access and utilities restrict the points at which fish can be landed, contributing to relatively high costs for landed fish
- the distance to Addis Ababa makes this a more expensive source of fish than some other lakes and adds risk of spoilage, and
- fish from Lake Tana has a bad reputation for quality (off-smell).

Current instability in trading relationships and fishing activity, combined with heightened competition, suggests that margins are relatively low. Improved organization amongst fishermen and traders, including the use of contracts, would enhance market development.

A number of market participants also indicate capital constraints, expressing interest in acquiring, e.g. large cold storage facilities and refrigerated transport. However, apparently

low margins in the current trading system suggest that very careful analysis of the returns to such investments would be needed.

Fish entering the frozen fish marketing system from Lake Tana is not a significant source of livelihood in Fogera *woreda* currently. The recommendations, however, focus on improvements that would have wider livelihood benefits elsewhere on Lake Tana and in other fishing areas:

- improving the quality of frozen fish
- strengthening fisher groups and their role in credit and inputs, marketing, information and resource management
- market information
- expanding the product range
- exploring the potential for sustainable fishing of river barbus, and
- strengthening capacity of government for participatory approaches and an improved understanding of markets.

In addition, the study team briefly reviewed the production and marketing potential for dried catfish, produced in natural seasonal ponds (flooded by lake waters). This trade is growing rapidly. The activity is a very important seasonal source of livelihood for thousands of people, including women, and since the product is less perishable, it is particularly well-adapted to relatively remote places. The team recommends that a similar study focused on an improved understanding of the marketing system be carried out for dried catfish, with a view to identifying opportunities to improve/expand livelihoods.

# 1 Introduction

## 1.1 Background

This is a report of a study undertaken as part of the Improving Productivity and Market Success (IPMS) of Ethiopian farmers project. The project is a five-year project (2004–09) funded by the Canadian International Development Agency (CIDA) and implemented by the International Livestock Research Institute (ILRI) on behalf of the Ethiopian Ministry of Agriculture and Rural Development (MoARD). It has four main thrusts:

- To develop and test a gender sensitive agricultural knowledge management system in the offices of agricultural and rural development, that will enable Ethiopian institutions, farmers, pastoralists and private sector to adopt appropriate technologies from research and development institutions based in Ethiopia and elsewhere.
- To build, test and strengthen gender balanced capacity of existing public and private organizations and individuals (farmers, pastoralists, traders) engaged in the agricultural sector to foster institutional learning and change so that new collaborative arrangements across sectors and levels are developed to better support the dissemination, use and impact of market oriented agricultural technologies and information.
- To introduce, test and strengthen gender sensitive processes, approaches and methods to facilitate the introduction and adoption/adaptation of technologies and, innovative input/output marketing arrangements and small-scale agri-business financing in pilot learning *woredas* (PLWs) in support of market oriented development.
- To generate, communicate and promote gender sensitive policy options and strategies, on technology generation and use, input/output marketing and small-scale agri-finance for scaling out and up market oriented agricultural development of national and international relevance.

During the initial participatory rural appraisal (PRA), fish was identified as a commodity with market potential in one of IPMS's eight pilot learning *woredas* (PLW), namely Fogera *woreda* on Lake Tana. ILRI invited WorldFish Center to provide inputs to IPMS in support of the fisheries-related work.

From a marketing perspective, two main fish products were noted, as well as local consumption of fresh fish in the fishing communities:

- dried catfish, from the lake and the ponds, destined for Sudan and markets in northern Ethiopia
- frozen fish (mostly lake barbus and tilapia), distributed largely to Addis Ababa, though some serves the restaurant/hotel trade in Bahir Dar on Lake Tana (and to a lesser extent, Gondar).

This study focuses on the frozen fish market chain for fish produced in Fogera *woreda*. In addition, in the margins of the main study, it was suggested that a preliminary assessment be made of the potential importance of the dried catfish trade.

## 1.2 Study objectives

- assessing the Addis Ababa market for frozen fish
- describing and analysing the frozen fish production and marketing system, for fish originating from Lake Tana, in particular from Fogera *woreda*
- identifying constraints to and making recommendations for further developing the frozen fish trade originating from Lake Tana
- making a preliminary assessment of the potential importance of the dried catfish trade.

## 1.3 Work program and methodology

The work was conducted in close collaboration with the *Woreda* Office for Agricultural and Rural Development and the Amhara Region Agricultural Research Institute (ARARI). The WorldFish Center economist sought to highlight key issues, help link WOARD and ARARI to other development partners, provide information and help build capacity on issues related to marketing systems analysis.

Following a short scoping visit in February 2006, the study involved an initial desk review of information available on fisheries and fish marketing in Ethiopia, followed by two weeks field work in June 2006 and subsequent analysis and write-up. The field work involved one day of preliminary discussions with market actors in Addis Ababa, followed by nine days on Lake Tana, visiting both fishing communities and marketing centres in the vicinity. The final few days were spent in Addis Ababa to follow-up with market actors in more detail. The study used the rapid market chain analysis methodology in which the various actors and their linkages in the chain are identified and their transactions analysed (Holtzman 2002).

The team comprised Sewmehon Tegegne Demissie (head of ARARI's Fish Research Unit), Melaku Tadesse (officer in charge of fisheries, in Fogera WOARD) and Ann Gordon (WorldFish Center). Although working together for the most part, the initial meetings in Addis Ababa were conducted by Ann Gordon alone, whilst the market investigations in Addis Ababa at the end of the visit were shared among team members. The two Ethiopian team members also contributed a large body of information relating to fishing and fish marketing activities on Lake Tana.

## 2 Overview of status and key trends in Ethiopian fisheries

### 2.1 Fish supply

#### 2.1.1 Fish production: Main sources, species and volumes

Following Eritrea's secession from Ethiopia in 1993 and the consequent loss of its coastline, Ethiopia has only inland freshwater capture fisheries. It has no significant aquaculture development. The inland capture fishery comprises: Rift Valley lakes (for example, lakes Chamo, Abaya and Ziway and the northern part of Lake Turkana) and Lake Tana, which although shallow, is the largest lake in Ethiopia; rivers; and small water bodies (reservoirs, natural ponds). There is fishing on all these water bodies, but commercial production (i.e. serving markets other than the local communities) is concentrated on the five lakes, with Chamo, Ziway and Tana particularly dominant (see Map 1).



Map 1. Important fish production areas in Ethiopia.

The main species are Nile tilapia, representing 60% of the catch, (Brueil 1995; Reyntjens and Wudneh 1998), Nile perch (favoured but increasingly scarce), barbus (two species) and catfish.

There are few reliable data on fisheries production in Ethiopia and the BoARD in Bahir Dar told the team that no data on landings had been collected for the last 5–6 years. Reyntjens and Wudneh (1998) estimated that total landings in 1996 were roughly 8500 t and rising rapidly. FAO (2003a) estimated that production of fish was 15,400 t in 2001.

There are seasonal variations in the availability of different types of fish, but as there are some differences between the lakes, traders can smooth out supply to some extent.

### 2.1.2 Fishing technology

Fishing techniques are overwhelmingly artisan, with very few motorized boats (limited to a very small number on Lake Tana and on some of the southern lakes). The predominant boat is the reed (papyrus) *tanqwa*. It is even difficult to obtain certain materials for nets (lead rope and floats). Gill nets are the most common, but there is also some use of beach seines, cast nets and line-fishing (the latter for Nile perch) (Brueil 1995). Traps, scoop nets and baskets are also used, particularly in the rivers.

### 2.1.3 Exploitation of fish resources

The general view seems to be that the lakes in the south are heavily exploited. For 8 important landing sites on lakes, FAO (2003b) estimated that offtake exceeds 60% of potential in 7 sites and 80% in 5 sites (including Awassa where offtake is estimated at 140% of potential).<sup>1</sup> Only in Lake Tana is offtake estimated to be dramatically less than potential (15%). Brueil (1995) noted the small size of fish and declines in landings in lakes Awassa and Ziway. Anecdotal evidence also comes from fish traders in Addis Ababa, whose sources are largely but not exclusively the lakes in the south. The traders consistently claim that fish size is declining. One interviewee had noticed a marked difference in supply (difficulty in obtaining required volumes) in the last two years. This view, of heavy exploitation of resources in the southern lakes, is also endorsed by Dr Eshete (fisheries scientist at ARARI in Bahir Dar, personal communication).

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1. These calculations are based on an estimate of maximum sustainable yield; thus offtake of 140% of potential means that resources are being over-exploited and that yields at this level are unsustainable.

### 2.1.3 Imports

Domestic supply is only supplemented by imports to a very small extent. FAO (2003) indicated that 36 t of fish were imported in 2001. Information collected as part of this study suggested that this is likely to be mainly marine fish and high value fish (possibly including small amounts of Nile perch from other East African countries), destined for hotels or upmarket supermarkets.

## 2.2 Fish markets and marketing

### 2.2.1 Demand for fish

Ethiopia's population in 2004 was 70 million, with annual growth of 2.1%.<sup>2</sup> Per capita gross national income was estimated at USD 110 in 2004. UNDP (2005) gave Ethiopia a very low human development index value (2003), with only 7 countries (out of 177) scoring lower. In 1999/2000, 44% of the population were estimated to live below the national poverty line, with the incidence of poverty higher in rural areas than in urban areas. Over the period 2000–2004, the annual average growth in GDP was 3.7%. The population is markedly rural. CSA (2001) indicated that less than 15% of the total population is urban (and, this must under-estimate the rural population share because it was based on a survey that included Addis Ababa but excluded 2 rural parts of the country). The population of Addis Ababa was 2.3 million in 1994 and is probably in excess of 3 million now. (Official estimates of around 3 million in 2006 are based on the population growth rate prior to the 1994 census. Many people think that Addis Ababa is now growing very rapidly and the official estimates may therefore underestimate its present size).

Ethiopians do not consume large quantities of fish, although there is no religious prohibition for the Christian and Moslem populations. Rather, this is a country with a strong tradition of livestock rearing and meat consumption. The Ethiopian Orthodox Church observes several fasting periods as well as fasting days every week, when meat is not consumed. Most Christians consider fish acceptable during those periods, though some strict followers will not eat any animal products.

These factors give rise to some particular characteristics of fish consumption in Ethiopia. Overall, per capita fish consumption is very low (perhaps as little as 200 g/year—based

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2. The data presented in this section come from World Bank (2005) unless otherwise indicated. Note that some sources quote higher population growth of around 2.9%.

on the population and production figures provided above.)<sup>3</sup> However, consumption is heavily biased towards quite limited geographical areas (production areas and Addis Ababa) and also heavily weighted towards fasting days (Wednesdays and Fridays) and fasting periods (55 days in March/April, 15 days in August, as well as other periods which may be less widely observed). Increasing scarcity (apparently reflecting both rising demand and supply constraints) has resulted in rising real prices for fish, so there is an increasing tendency for fish to be a luxury product consumed by higher income groups. Moreover, anecdotal evidence from interviews with traders and other observers suggests that higher income groups may represent a significant source of the increase in demand (reflecting wider exposure to different types of food and echoing the global shift in demand towards fish as a healthier source of animal protein), though population increase (particularly in growing Addis Ababa) and a modest general increase in incomes are also factors.

All three factors noted above will contribute to an increase in demand, i.e.:

- a shift in demand towards fish by higher income groups
- growing incomes (per capita GDP is increasing at around 1.6%). At relatively low consumption and income levels, fish is probably a luxury good (i.e. a 1% increase in income will boost demand by more than 1%), and
- population increase.

Population growth alone is associated with a 2.1% annual increase in aggregate demand. If indeed fish is a luxury good in Ethiopia, as suggested above, then population growth combined with income growth<sup>4</sup> would boost demand for fish at a rate of at least 3.7% per annum.<sup>5</sup> This equates to a 20% increase in demand over 5 years and a 44% increase over 10 years.

The assumed shift in preferences would deepen the effect. Furthermore, if the population of Addis Ababa (a major focus for fish consumption) is growing faster than the rest of the population and incomes there increasing faster too, there would be a still stronger increase in demand.

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3. Note that this is based on the landed weight of whole fish, so actual consumption (after filleting or removing the head etc.) is even less.

4. Assuming that the fish consuming population is experiencing income growth at least equal to the average increase in per capita GDP.

5. To put this estimate in context, Delgado et al. (2003) estimated that over the period 1997–2020, aggregate fish consumption in sub-Saharan Africa will increase by 2.4% per annum. Their estimate takes account of factors that will contribute to increased demand but also takes into consideration the effect of rising prices (because supply will not keep pace with demand), which will in turn limit the potential for increased consumption. The crude estimate provided above for Ethiopia is simply the implied increase in demand. This takes no account of prices changes that will affect consumption. A survey of the relevant literature by Asche and Bjørndal (1999), cited in Delgado et al. (2003), found that own price elasticities of demand for fish are relatively high (–0.8 to –1.5), implying that a 1% increase in the price of fish would reduce consumption by 0.8–1.5%.



Where supply cannot match these increases in demand, the real price of fish will rise. The 1999/2000 household consumption survey found that calorie intake from fish, although still a negligible source of calories in people's diets on average (0.0% after rounding), increased by 50% in rural areas over the four-year period to 1999/2000 and doubled in urban areas (CSA 2001). The country average was 0.3 calories per person per day and consumption in urban areas was twice this. Those reported increases in consumption during the second half of the 1990s suggest (but do not confirm) that fish remained affordable and hence that supply was able to keep pace with demand. The alternative explanation is that rising incomes and a shift in preferences (generally or in specific groups) meant that despite rising prices, people still chose to increase their consumption of fish—or were driven towards fish because of even greater price increases in substitute foods (such as meat).

Anecdotal evidence obtained through discussions with traders suggests that the tightening in supply may well be a more recent phenomenon (over the last 2–5 years) and that there were indeed significant increases in catch during the 1990s (when landings were still being recorded, at least to some extent). All traders indicated that they could sell larger quantities of fish if it were available—though clearly only at the right price.

### 2.2.2 Fish products

As the discussion of production indicates, tilapia is the dominant species caught and consumed in Ethiopia, although this does not hold for all groups and for all areas. In fish production areas, fish consumption patterns reflect the local availability of fish (with some notable exceptions, such as catfish in Fogera *woreda*, see Section 4). Fish Production and Marketing Enterprise (FPME) retail staff indicated that the range of fish available has increased over the last twenty years: previously the focus was exclusively Nile perch and tilapia.

Relative pricing gives some indication of preferences and/or abundance: Nile perch (where available) is most expensive, followed by tilapia, catfish and barbus. Tilapia retains its value despite relative abundance, indicating strong consumer demand.

Outside of the production areas, where much of the local trade is in fresh whole fish, there is a relatively strong preference for fillets and most frozen fish is traded as fillets. Barbus is the exception and is sold whole, gutted and skinned.

There is negligible use of ice (as indicated by traders and observed with only some trucks using ice to limit thawing of frozen fish being transported overnight from production areas to Addis Ababa). Ice is used on neither fishing boats nor collector vessels.

At landings, fish is traded fresh for rapid consumption or resale. However, at trader collection points, freezers are used and the frozen fish is then sent to Addis Ababa and local urban markets (even those situated on lakes). Thus, the fish products on sale in Addis Ababa (and in urban centres near the production areas) are frozen—and very often filleted. (Or, more accurately, the fish is semi-frozen on arrival in Addis Ababa, following transport in normal non-insulated trucks).

In addition, and although not a focus for this study, it should be noted that there is a tradition of dried fish consumption (particularly catfish) in some parts of Ethiopia, notably Tigray. The product range of the formerly state-run FPME, which is the largest single trader of fish in Ethiopia, includes smoked fish and dried fish. Although there is presently a shortage of Nile perch (sourced from Lake Turkana), the FPME indicates that sun-dried Nile perch is usually its most important product line, with a good market in Addis Ababa.

### 2.2.3 Overview of frozen fish marketing system

The FPME, the former parastatal, is the largest single trader of fish products in Ethiopia, focusing overwhelmingly on the supply of frozen fish and dried Nile perch to domestic markets (with tiny quantities exported to Sudan and Saudi Arabia). FPME argues that its operations have been subject to competition from other traders for the last 12 years and that it does not operate under any privileged financial arrangements. However, the government is able to facilitate access to credit for FPME, which may confer some advantage over its competitors. Moreover, it is not clear what costs FPME incurred for existing assets; it seems likely that these represented a significant subsidy and advantage to FPME when fish marketing was liberalized. FPME has considerable plant and premises, including: freezing facilities and cold storage at production points, cold storage in Addis Ababa, refrigerated transport and other vehicles, and 17 retail outlets all with multiple freezers.

In general, FPME buys fish via contractual arrangements with fishing co-operatives operating on lakes Tana, Ziway and Langano, and in Arbaminch (with its two lakes). Fish is gutted and filleted at the landing site and quickly frozen. The cold chain remains intact throughout transportation and retailing, which is unlike the operations of any other trader. Fish is sold through FPME's own retail outlets, whose spread again reflects the general pattern of fish consumption concentrated in the capital and in production areas: 13 in Addis Ababa and one each in Debre Zeit, Gondar, Bahir Dar and Ziway. FPME also sells fish directly to some institutional buyers, including large hotels in Addis Ababa. It currently handles about 1200 t/year (weight of wet whole fish).

Although FPME was the dominant trader for many years and remains the single largest trader, it now handles only a small share of production (8% or less). Cumulatively, the volumes handled by the other smaller traders exceed those handled by FPME. However, FPME's cold chain and the general standard of handling and hygiene (from landing to retail) set it apart from the other traders.

There are a number of other fish wholesalers operating in Addis Ababa, usually with links to a specific area of supply. Some of these operate all year round, whilst others have more seasonal operations (particularly during fasting periods when demand is high). Many have been operating for a long time—some interviewees had traded fish for 30 years.<sup>6</sup> In the Piazza market area of Addis Ababa there are around 8–10 such traders and the team interviewed 2 others with fairly well-established operations in other parts of Addis Ababa.

Most of the traders in Piazza have small lock-ups, with 2–6 chest freezers. They trade roughly from 0600–1800 hours, but the morning is busiest. They receive fresh or frozen fish (the former from lakes close to Addis Ababa, such as Ziway, which is about 2.5 hours drive), sometimes transported with ice, usually arriving in Addis Ababa early morning. They have contractual arrangements with agents or fishing groups (i.e. co-operatives) in the production area and rent space in regular trucks (with fish being just one part of a larger load). Although some traders may buy fish that has been filleted at the landing, much of this fish is filleted on arrival in Addis Ababa for direct sale to consumers or smaller traders (for instance, ambulant traders operating in Mercato), or filleted and then frozen. These traders also sell to small hotels and supermarkets.

The two larger traders interviewed by the team did not have retail outlets but had larger stores and conducted their trade by telephone, selling to larger buyers (including large hotels)—to whom the fish is delivered or who collect with their own transport. These two traders have significantly more freezer capacity (three tonnes or more) but do not have refrigerated transport.

Unsurprisingly some traders and the chef of a large hotel in Addis Ababa expressed considerable concern about the poor quality of the fish available in Addis Ababa—saying that it was often a reason to reject a shipment or to 'blacklist' certain agents sending fish from the production areas. The principal indicator of poor quality was the smell. The key issue here seems to be the absence of a cold chain for all fish traded except that handled by FPME.

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6. As far as the authors could ascertain, FPME operated as a parastatal until 12 years ago, when it stopped receiving direct financial support from government. Other traders were able to operate, though clearly FPME had a significant advantage.

## 2.2.4 Approximate size of market in Addis Ababa

On the basis of the work described here, it is very difficult to arrive at an accurate estimate of market size in Addis Ababa—principally because there is clearly so much day-to-day and seasonal variation, handled by many different agents. Moreover, the team did not visit other production areas, which are important supply sources for the capital. Nevertheless it is possible to at least have a rough idea of its magnitude.

Addis Ababa has 13 of FPME's 18 outlets, representing annual sales of roughly 800 t (weight of whole wet fish). The two largest hotels in Addis Ababa probably use around 50 t (filleted weight) per annum (or roughly 125 t of whole wet fish). There are at least 10 specialized (non-FPME) frozen fish retail outlets, with daily capacity in the range 0.5–1 t (filleted weight). If one assumes that average daily sales are 0.5 t, with trade 6 days per week, then these outlets represent sales of around 1560 t/annum (filleted weight) or roughly 4000 t (weight of whole wet fish). These figures, that do not include all sources of fish in Addis Ababa, amount to aggregate sales of around 5000 t/annum (weight of whole wet fish), or roughly 1/3 of estimated national supply (2001).

This estimate is clearly very crude but not inconsistent with observations around Lake Tana, where more than half the visibly traded (frozen) fish seems to go to local urban markets (Gondar and Bahir Dar) and the remainder to Addis Ababa. In addition, a significant proportion of the catch is consumed within fishing communities or traded as fresh fish in the immediate vicinity. Thus, it would seem plausible to suggest that for Lake Tana perhaps 20–25% of the catch is destined for Addis Ababa.

## 2.3 Policy and institutional context

### 2.3.1 Market liberalization, state enterprise and co-operatives

Historically, Ethiopia's economy was heavily controlled by the government with parastatals and government-supported local-level co-operatives. In the early 1990s there was progressive liberalization of markets such that government institutions no longer play a significant role in direct marketing of rural produce, with this role now left to private traders. However, as in many other African countries, there is growing recognition that these liberalized markets are not delivering the development required to lift rural areas out of poverty and largely subsistence activity. Recent debate has focused on how to address problems of market fragmentation, weak demand, high transaction costs and weak market actors.

New initiatives and policy directions in Ethiopia include:

- renewed attention to organizing smallholder farmers in multi-purpose co-operatives, so that they might play a more significant role in the market
- a focus on strategic commodity sub-sectors (such as horticulture and livestock) for export-led income diversification
- emphasis on commercialization
- engagement with the private sector as key partners in expanding agricultural exports and
- a new MoARD directorate tasked with developing a national input and output marketing strategy at federal-level, linked to strategies at regional and sub-regional level (MoARD–IFPRI 2005).

These general shifts in government thinking and emphasis constitute the policy context within which the fisheries sub-sector operates. Fish marketing issues have not been singled out for special treatment within this broader policy debate.

Notably, FPME is one example of a parastatal that continues to operate, albeit now subject to competition from other traders and apparently without any significant public subsidy. There is periodic talk of privatizing FPME but no public decision on this to date. Whilst there may be elements of unfair advantage enjoyed by FPME over other market actors (for instance, easier access to credit and substantial assets, in the form of premises, plant, and vehicles, previously acquired from government or donor projects), it may actually operate at a disadvantage in some other respects (it may be less easy to reduce staff numbers or even dispose of some assets, thereby reducing its flexibility and adding to running costs).<sup>7</sup>

Many co-operatives remain—some of them little more than producer groups not currently engaged in any co-operative enterprise, some still heavily-supported by government or by projects, but others (such as Tana Haik I Fishing Co-operative) appear to be well-managed as a producer co-operative enterprise. The latter has sought to incorporate smaller producer groups operating at *kebele*-level, in a bid to improve efficiency and realize economies of scale.

The *kebele* is the lowest-level government-determined administrative unit. A *kebele* comprises, on average, between 4–5 villages. Elected *kebele*-level positions are financially supported by government and these provide an important link to *woreda*-level local government. Within each *kebele* there may be sub-groups of producers, e.g. fishers (sometimes called co-operatives). These groups may incorporate producers from more than one *kebele*.

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7. In addition, FPME argues that it takes care to source fish from reputable suppliers, observing recommended fishing practices (notably relating to mesh size). It alleges that its competitors are not so vigilant in this regard.

### 2.3.2 Decentralization and extension services in fisheries

Central government ministries are represented at regional-level and at *woreda*-level. Thus, in Bahir Dar (the regional capital), the MoARD is represented by the regional Bureau of Agricultural and Rural Development (BoARD) and in Wereta (the administrative capital of Fogera *woreda*) by the *Woreda* Office for Agricultural and Rural Development (WOARD).

The BoARD has officers responsible for fisheries (statistics and planning) and the WOARD in Fogera also has an officer responsible for fisheries data collection and extension.

### 2.3.3 Fisheries policy and projects

A National Fisheries Proclamation was ratified by Parliament in 2003. It provides broad guidelines relating to resource conservation, food safety and aquaculture. This document puts considerable emphasis on regulation, permits and the role of the fishery inspector. It is intended that the regional administrations should then use this as the broad framework within which their own proclamations are developed.

Although not all of the regional proclamations have been finalized, the proclamation for Amhara Region was developed in 2003. It covers the same areas as the national policy, but has an additional objective relating to the creation of employment opportunities in fishing communities. It also states that information, including research findings, should be made available to the fishing communities. As with the National Proclamation it relies heavily on regulatory measures ('command and control') and the role of the fishery inspector. There is no mention of co-management, though one of the stated objectives ('...to prevent and control over-exploitation of the fisheries resource') would seem to leave open this option.

At both national and regional level, the proclamations reflect concern that fish products should conform with prescribed standards, although the latter had yet to be developed when the proclamations were drafted. At national-level, guidelines have now been developed and were with the Council of Ministers when field work for this study took place in June 2006. Pending official endorsement, these are not yet in the public domain.<sup>8</sup> It is noted that although such standards exist in some other sectors, they are not widely used or enforced (Woldu 2005).

In the past, the fisheries sub-sector benefited from a number of donor projects.

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8. It is understood that the draft Fish Quality Assurance Regulation meets EU export requirements. Based on the Kenyan model (which supports a significant export trade in Nile perch from Lake Victoria), one of its requirements is the establishment of a Fisheries Authority.

NGOs (e.g. the Interchurch Foundation Ethiopia and the Interchurch Organization for Development Co-operation) have been active throughout Ethiopia. Their most visible impacts are seen in the southern part of Lake Tana, where their activities led to the introduction of motorized vessels and improvements in the physical landing/marketing infrastructure, now used by Tana Haik I Fishing Co-operative and FPME. Wageningen Agricultural University was involved in fisheries research and the European Commission (EC) was the main donor. The 1st phase of the EC-funded Lake Fisheries Development Project started in 1982 (focusing on improved fishing technologies, resource surveys on lakes Ziway and Abaya, and upgrading FPME's processing and marketing capacities). The 2nd phase started in 1992 and changed emphasis to reflect the shift to a market economy. It focused on the Rift Valley lakes and Lake Tana and helped put in place routine data collection and analysis systems<sup>9</sup> (Reyntjens et al. 1998).

The only major fisheries development project now on the horizon is supported by the African Development Bank. Although the planning is still at an early stage, it proposes a USD 1.4 million project to improve fish exploitation, focusing on the preparation of a fisheries development plan and activities to support its implementation. It is anticipated that this will commence in the next fiscal year (Head of Livestock Division, MoARD, Addis Ababa, personal communication).

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9. These systems were subsequently abandoned around 2000 (BoARD, Bahir Dar).

## 3 Fish production in Fogera *woreda*

### 3.1 Lake Tana area—An overview

Located in Amhara Region, Lake Tana is Ethiopia's largest lake and the source of the Blue Nile. It is a shallow lake, not exceeding 14 metres in depth. With recent improvements in the road system, Bahir Dar, the main town on the lake in the extreme south, can be reached by tarmac road from Addis Ababa in about 9 hours.<sup>10</sup> From Bahir Dar, there is a tarmac road to Gondar, running north to the east of the lake, 3–7 kilometres inland, making this side of the lake relatively accessible. (From this road there is also one tarmac spur to the lake, from Meksenyt). The rest of the lake is served by dirt roads (many of which are not passable by vehicles during the rainy season), a ferry from Bahir Dar serving the western and northern shore villages, and informal boat transport (see Map 2).

Bahir Dar has a population of about 110 thousand and is currently expanding rapidly, with much new construction. It has good services and is both a regional (administrative) capital and a commercial centre—drawing in migrants from the surrounding rural areas. It attracts both Ethiopian and foreign tourists because of its attractive location on the lake and because the area has many famous monasteries. It has many hotels and restaurants (including new development) and is an important market for goods produced locally and items shipped in from Addis Ababa.

The only other significant town in the vicinity of Lake Tana is Gondar—an important transport and tourist centre, roughly 40 kilometres north of the lake and 3 hours drive from Bahir Dar. Gorgora is a small town on the northern shore, with no tarmac road and no mains electricity. The settlements in the west are even less accessible.

### 3.2 Fogera *woreda* population and geography

Fogera *woreda* is located 55 kilometres to the north of Bahir Dar on the eastern shore of the lake. The *woreda* has two small towns: Wereta and Alem Ber. Wereta is the *woreda* capital. Located on the main road, it has good services (transport, electricity, telephone) and government offices. To its west, the *woreda* comprises a plain that floods from the lake during the rains, making it an important and extensive wetland area. To the east, the land gradually rises to 2400 metres (650 metres higher than Lake Tana). The *woreda* is drained (into Lake Tana) by two main rivers, one on its northern border with the next *woreda* (Rib River) and the other in the south (the River Goumera). The population of the *woreda* was 234 thousand (IPMS 2004).

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10. Only the Nile Gorge section of the road is not tarmac.





**Legend**

FOGERA PAs	<b>Road network</b>	<b>Rivers</b>
<b>Large towns</b>	Asphalt	<b>class</b>
<b>Pop. 2006</b>	Earth road	major
150001 - 200000	Main Gravel	minor
100001 - 150000	Minor Gravel	
50001 - 100000		
25001 - 50000		
5000 - 25000		
4999		
Small towns		



Map 2. Lake Tana and surrounding area.

Away from the main road, there is no mains electricity and virtually no telephone network (although mobile phones work in some areas and settlements may have one land-line telephone in a government office). The dirt roads are poor and many areas can only be reached on-foot or by donkey for several months in the year, following the rains. Ownership of vehicles is very limited in these areas. Some villages have diesel-powered mills but generally very little use is made of power generators. Lake transport is also very slow and uncertain (transfer from Fogera *woreda* to Bahir Dar could take 5 hours, not including the time needed to walk to the lake shore, negotiate a ride to a point where it might be possible to find transport to Bahir Dar, and waiting time). The two villages near the lake are Nabaga and Wagatera.

### 3.3 Fogera *woreda* fisheries extension

At *woreda*-level, extension officers are non-specialists (often with a diploma in agriculture) and positions covering different sub-sectors are rotated every few years.<sup>11</sup>

In Fogera, the person covering fisheries is responsible for: data collection, liaison with the fisher groups at *kebele*-level, making sure that fishing regulations are observed, and trying to improve market prospects for fishers (including gathering information on products and technologies, trying to introduce buyers to the fishers' groups or otherwise raise trader awareness of the products available). Such a role in marketing aspects is very progressive and (more broadly) rather unusual in agricultural (fisheries) extension (partly as a result of the IPMS project focus on redefining the role of the extension staff). Unfortunately staff do not receive training in this aspect of their job. Nevertheless, some of these officers are very knowledgeable about the market and how it functions. These officers may also have some responsibilities for other sub-sectors too. (For instance, the officer in charge of fisheries in Fogera covers apiculture too).

Although the extension services in Fogera are constrained in their capacity to reach out to farmers (in terms of staff numbers, staff capacities and resources for field work), within that broad context, fisheries extension is relatively well-covered in the *woreda*. There is only one officer for the sub-sector, but he does have access to transport to make field and market visits (though this may be atypical and relate to the IPMS project). Moreover, that part of the fisheries sub-sector that is legal and commercial in Fogera is relatively small—relating only to a few lake fishermen and the Nabaga seasonal ponds (involving many fishers but in a concentrated area).

However, there are clearly capacity constraints relating to data collection on Lake Tana fishing activity more broadly and negligible experience with participatory methods to

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11. Ashagri, former officer in charge of fisheries, WOARD, Fogera *woreda* (personal communication).

improve fishing practices (notably relating to co-management and reducing the use of illegal gear). At present the dual roles of friend (extension agent and market contact facilitator) and policeman (enforcer of regulations) reside rather uncomfortably with the same *woreda*-level fisheries officer. The officers concerned also receive little or no training in their market development facilitating role—which is clearly an important area where there is a need to build stronger capacities.

## 3.4 Lake Tana fishery

The annual catch from Lake Tana is estimated at around 1000 t. The last year for which the BoARD collected landings data was 1996; recorded landings were in the range 470–1470 t in the preceding 4 years. Depending on the season, this catch comprises varying volumes and proportions of tilapia, barbus and catfish.

### 3.4.1 Seasonality in the fishery (provisional indications)

March–August: highest catch levels from Lake Tana

November–May: harvest period from seasonal ponds

January–July (and especially Mar/April/May)—tilapia important

June–September (especially June/July)—catfish important

June–September (especially August)—barbus important

Closely associated with the lake fishery are: (a) the natural seasonal ponds (mostly on the eastern shore) that are linked to the lake and flood during the rains—producing tilapia or catfish, and (b) the rivers which are important spawning grounds for lake barbus (particularly three rivers that drain into the lake, the Goumera, Magetchi and Derma).

The vast majority of fishermen use *tanqwa*—traditional reed boats (which numbered nearly 400 in 1998, according to Tegegne (2003), and numbers are likely to have increased since). For the whole lake, there are fewer than 25 motorized fishing boats, most of which land their catch in Bahir Dar (either directly or via collector boats). Traditionally, the lake was only fished by the indigenous tribe, but recently, with improved marketing prospects, fishing has been taken up on a part-time basis by the long-established agricultural migrant community (i.e. migrants who came to the area more than 100 years ago and now represent the dominant group).

Inaccessibility is a significant constraint to marketing and hence acts as a brake on fishing activity. Thus, the resources in the south of the lake within reach of the Bahir Dar market, are allegedly heavily exploited. The eastern part of the lake is now the focus of

attention—with potential to sell fish in Bahir Dar (via motorized collector vessels) or to carry fish on-foot or by donkey to the main road, where traders have become established with the completion of the tarmac road and the arrival of mains electricity. There is also fishing activity in other parts of the lake but most of this is subsistence in nature, or relatively small-scale because the prospects for marketing are so limited. However, some of these areas have recently started producing dried fish.

The fishermen are organized to some extent within their *kebeles*. This local administration has a defined structure, with officers responsible for different sectors (health, education etc.). Leaders are elected but then paid by government. The *kebele* serves in part as a link between the *woreda*-level administration and village affairs. Community-level decisions are taken by the *kebele* administrators in consultation with community members. Within this structure, a fishers' group was identified in Wagatera and in Nabaga. Those interested in lake fishing were encouraged to become members of the Tana Haik I Fishing Co-operative based in Bahir Dar (see below). Those fishermen either rent boats from the Co-operative or are waiting until more boats become available.

Traditionally the role of women in capture fisheries in Ethiopia is mainly confined to net-making (and post-harvest activities described in the following section).

## 3.5 Fishing in Fogera *woreda*

### 3.5.1 Lake Tana

In Fogera *woreda*, fishing activity on the lake comprises:

- six fishermen from Nabaga and Wagatera villages, using a motorized boat rented from the Tana Haik I Fishing Co-operative (in Bahir Dar), with each of the three pairs of fishermen taking it for one week at a time, using gill nets (and reverting to *tanqwa* fishing during the other two weeks);
- possibly some other motorized boats from Bahir Dar, though most of these probably fish in waters to the south of Fogera *woreda*
- thirteen *tanqwa* in Nabaga and Wagatera, using gill nets
- use of fish traps.

This fishing takes place all year round but the catch is very low during October and November. The annual catch from the motorized boat (which has its marketing assured via the Co-operative) almost certainly exceeds that of all the other *tanqwa* and traps used in the lake in Fogera *woreda*. The six fishermen using the motorized boat only started operation in October 2005, but a rough calculation suggests that the average annual catch of the Co-operative's motorized boats is about 25–30 t of fish per vessel. The six fishermen from Fogera *woreda* are supposed to sell their catch to the Tana Haik collector

boat that makes a daily trip from Bahir Dar to an island just south of Fogera (Rema Medhane Alem). There are two or three other collector vessels that sometimes collect fish from the same area (representing the FPME, the Zege Fish-for-All group and Georgis, a Bahir Dar trader—see discussion of constraints below).

### 3.5.2 Natural seasonal ponds

The *woreda* has two large seasonal ponds that are connected to the lake and flood during the rainy season. As the waters recede, these become extremely productive ponds for catfish which are caught in the period from February–May with gill nets and spears by large numbers of local farmers turned seasonal fishermen (perhaps around 600). The catch is dried (women help with this aspect) and sold to traders. This fishery is easily the most important in the *woreda* in terms of revenues and employment. (In the *woreda* to the south, Hamusit, there is a similar natural pond that produces wild tilapia, which is sold fresh.)

It should be noted that until three years ago, the Fogera ponds were not fished at all. Catfish is not eaten by the local population and the fish were apparently left to die. However, a combination of factors (including improvements in the roads to Sudan) has led to greater trader interest in dried catfish. Starting in 2004, a trader leased the two ponds from the *kebele*<sup>12</sup> (he provided funds for the community to construct a church) gaining exclusive fixed price purchase rights to the fish, which was dried by the local community. The following year, the lease was renewed, in return for a payment of ETB 5000, and in 2006, the payment increased to ETB 19 thousand (roughly USD 2200).

### 3.5.3 Rivers

The rivers, particularly Goumera River to the south, are important spawning grounds for lake barbus, but also a source of tilapia and catfish. Around 400 people are involved in the fishery on a part-time or seasonal basis, with fishing (using traps) particularly pronounced during the official closed season for barbus (August–October).<sup>13</sup> Although widely traded and consumed in Ethiopia, barbus is the least preferred of the main fish species available in Ethiopia, so the catch (which is sold fresh) attracts relatively low prices from traders and local hotels and restaurants. However, the volumes are significant, so fishermen find it worthwhile despite the poor prices. Fishermen complain

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12. Only people from the *kebele* are allowed to fish in the seasonal ponds.

13. In order to sustain the fishery, it is illegal to fish during the closed season when breeding and reproduction is taking place.

that their efforts to realize better prices are hindered by the illegal nature of the fishing and the poor bargaining position this confers. Certainly lake barbus sold to traders in Bahir Dar commands higher prices than that caught in the rivers. However, the low prices received for river barbus almost certainly also reflect the very high volumes caught during the peak season and the limited size of the local rural markets.

The spawning season, when there is most fishing activity, coincides with the lean season, so the fishery represents a seasonally important source of sustenance and income for some households. Fisher–farmers interviewed during the course of this study, who concentrate on this activity during a four-month period, estimate that it represents about one-seventh of their annual income.

The team did not investigate this fishery further, because of its illegality. However, it should be emphasized that the fishery is important to large numbers of households and particularly so during the most difficult part of the year (i.e. the lean season).

### 3.5.4 Relative importance of the different fisheries

There is no firm information on the landings from these different fisheries at the present time. Melaku Tadesse (co-author and officer responsible for fisheries within the Fogera WOARD) estimates their order of importance, in terms of employment and marketing revenues, to be:

- seasonal ponds
- rivers
- Lake Tana.

## 3.6 Constraints on fishing activity

### 3.6.1 Lack of sufficient capital (including access to credit) to purchase fishing gear

In common with small-scale fisheries worldwide, many fishermen in Ethiopia lack the resources to buy fishing gear. It is an irony of fisheries that although a ‘commons’ (and hence often an important source of livelihood for the poor, who lack land or other resources), most fishing requires some financial investment. The result is a heavy concentration on gear that is low-cost (*tanqwa*) or requires only labour and local materials (traps). Traditional *tanqwa*, once made all around Lake Tana, or the papyrus, are now purchased in Bahir Dar, where the papyrus is still available. Depending on the weather (humidity), a *tanqwa* lasts 15–60 days and costs USD 2–4.



Fishermen reduce the cost of nets by making their own, but still many fishermen do not have their own nets. This limits fishing activity or makes fishermen reliant on gear loaned by traders, locking them into sales agreements, usually on poorer terms.

Tana Haik I Fishing Co-operative rents out motorized boats to its members on a full cost recovery basis. (The Co-operative receives no outside support.) It too lacks capital to purchase sufficient boats to meet the demand from fishermen (41 or roughly one-third of its membership are still waiting for boats).

There are two sources of credit in Fogera *woreda*:

- Amhara Credit and Savings Institute offers credit at 18% per annum—a rate considered prohibitively high by many people in the fishing communities; and
- the farmers' co-operatives make loans at 12.5% per annum, but are not present in all the *kebeles* and therefore not accessible to everyone.

As far as the team is aware, no fisherman in Fogera *woreda* has used either of these two credit sources to purchase fishing gear. At times of crisis, fishermen in one of the *woredas* to the north, where traders are very active, report taking emergency short-term loans from traders, apparently (and surprisingly) without any obligation to sell their catch to that trader. However, that area (Enfranz—see discussion below) has seen a very rapid expansion in fishing effort (using *tanqwa* and nets), with fishermen apparently owning their own gear—suggesting that lack of funds to purchase gear is not a constraint there. Moreover, interviewees in Enfranz indicated that there were no input–credit–sales arrangements between fishermen and traders in operation there.

### 3.6.2 Availability of selected types of fishing gear

Motors for boats, whether in-board or outboard, are not easily available in Ethiopia. It is also difficult to obtain spare parts. The General Manager of Tana Haik I Fishing Co-operative described how he recently purchased five second-hand engines, in need of repair, from another co-operative on a lake in southern Ethiopia. It seems that earlier development projects were the source of some of the motorized boats (8 of Tana Haik I's 13 boats were 'inherited' from an earlier project in which it participated). However, the lack of availability of motors must also reflect lack of effective demand (i.e. demand backed by purchasing power). If there were higher demand, presumably an importer would seize this trading opportunity. Presumably too, the co-operative from which the Tana Haik I second-hand motors were purchased would have been less willing to see them idle for want of repair and to sell them on.

Floats and lead rope used with nets are also difficult to obtain in Ethiopia.

### 3.6.3 Relatively high cost of fish caught with motorized vessels on Lake Tana

Current instability in the arrangements for fishing and collection suggests that margins were very low at the time of field work in June 2006—apparently brought to near-zero with recent increases in fuel costs, increased numbers of motorized fishing vessels and a seasonal reduction in catch. A number of changes were taking place: (a) fishermen were being offered lower prices, (b) established trading partnerships were breaking up and new ones emerging, (c) traders were less willing to send collector vessels to those parts of the eastern lake where the motorized fishing boats operate, claiming that the costs were prohibitive given the small catch size, and (d) fishermen were responding by reducing the number of days they fish per week.

Some of this may have been triggered by the need to offload the additional catch of a new entrant onto a marketing system that lacks capacity (at least seasonally) to rapidly absorb a larger volume of fish. (The Zege Fish-for-All fishing group, with five motorized vessels which were provided as a grant to needy families, started operations two years ago but production has been gradually increasing.) Certainly, the motorized vessel fishers seek to maximize fishing time and minimize costs, by crews changing *in situ* without the boats returning to base, by the use of collector vessels that collect from several boats and by the use of second-hand motors. (Tana Haik I Fishing Co-operative has 12 motorized fishing boats, served by one collector vessel.)

The cost advantage of the fishermen working on the lakes in the south appears to stem in part from the shorter distance to Addis Ababa (at least for Lake Ziway which is 2.5 hours drive from the capital, but less so for the other lakes) and also from the fact that there is much better road access to some of those lakes, than there is to Lake Tana. Lake Tana appears to be disadvantaged by the fact that there are very few points where there is year-round access to the lake shore.

The relationship between these costs and marketing is further explored in Section 4.

### 3.6.4 Marketing constraints

The major marketing constraints faced by the fishermen are: (a) physical access to landing points, collector boat collection points, and road-side traders, (b) prices that are insufficiently remunerative to fishers (partially reflecting the high costs of landing the catch), and (c) loss of quality because of limited options for conservation and time/distance from trading points. These will be explored in the next section, but are



mentioned here because they clearly act as a brake on fishing activity (evidenced by rapid increase in fishing effort when these constraints are removed).<sup>14</sup>

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14. The team interviewed traders and fishermen in the small town of Enfranz. Enfranz is located on the tarmac road, to the north of Fogera *woreda*, at a point just two hours walk from the lake. With gradual improvements in the tarmac road and the advent of mains electricity, Enfranz has become an important fish trading centre in the last four years. There are presently nine traders located there, each with freezer capacity, sending fish principally to Bahir Dar and Addis Ababa. Fish are head-loaded or carried by donkey from the lake to the traders. Until 3–4 years ago, only the traditional indigenous minority community fished, but now the larger lakeside community is involved (more than 100 fishermen), using *tanqwas*, with numbers still rising. All these fishermen reportedly have their own gear (*tanqwas* and nets). One collector boat operates in this part of the lake but the fishermen prefer to sell to the road-side traders who offer higher prices. Each trader has 'scouts' who will lead fishermen to them, but otherwise there is not much evidence of price competition or other strategies to assure supply. At least one trader has operations in other road-side locations east of the lake too (Yifag, Hamusit, Woreta).

## 4 Marketing systems for lake fish produced in Fogera *woreda*

### 4.1 Overview

This section focuses on lake fish that enters the frozen fish marketing system, destined principally for Bahir Dar and Addis Ababa. It does not explore the local village and *woreda*-level trade, because this trade takes place relatively unhindered (being close to the landing) and any scope it offers for growth can be met relatively easily. Nor does it explore the river barbus trade, principally because of the illegal nature of the fishing activity. The section concludes with some summary observations on the recent emergence of a significant trade in dried catfish. Indicative snapshot information on prices and selected costs is attached at Annex 1. The questions used to guide interviews with market participants are attached at Annex 2. Box 1 below summarizes the trading options and marketing systems for different fishers.

#### Box 1: Overview of marketing systems for Fogera *woreda* lake fishers

Motorized boat fishers (6 fishermen, 1 boat)/Fogera *woreda*

- sell to Tana Haik I Fishing Co-operative (via collector boat)
  - 3 days/week—Co-operative sells to FPME
    - FPME retails in Bahir Dar or Gondar/or sends to HQ
      - sales to HQ marketed through FPME retail outlets or to institutional clients in Addis Ababa
  - 2 days/week—Co-operative sells in Bahir Dar (Co-operative retail outlets)

*Tanqwa* fishermen

- sell to Tana Haik I Fishing Co-operative (as above)
- sell to other collector boats (Georgis, Zege Fish-for-All, FPME)
  - who retail in Bahir Dar and/or send fish to Addis Ababa
- occasionally sell to traders coming to the lakeshore communities

Traders send fish to traders in Addis Ababa negotiating directly with the latter—there are no extra points in the marketing system between the two towns.

All fishermen retain fish for home consumption and informal local sales.

## 4.2 On-board handling, fish collection and landings

Fish are caught using *tanqwa* and motorized vessels. No use is made of ice on-board. Most of the catch is caught overnight/early morning and transferred to Bahir Dar via collector vessels that purchase fish around 0700–0800 hours each day, from points just south of Fogera *woreda*, returning to Bahir Dar in time to land the fish at around midday. It seems that occasionally one trader purchases fish from the lakeshore (principally from *tanqwa* fishermen), taking it to Hamusit by car (where he has freezers).

The following collector vessels operate in this part of the lake:

- Tana Haik I Fishing Co-operative—its vessel operates four days per week, collecting at Rema Medhane Alem (an island just south of Fogera *woreda*), from Co-operative members and other motorized boats; (Co-operative members take their boats to Bahir Dar once/week, for servicing, obviating the need for collection that day);
- Zege Fish-for-All association—one of its five boats sometimes acts as a collector vessel at Jigerfa Tekle Haimanot (JTH), south of Wagatera in Fogera *woreda*, from where it can collect from *tanqwa* and motorized vessels;
- FPME has a collector vessel that also collects from JTH; and
- Georgis, a trader-cum-fishing group based in Bahir Dar, also collect fish from JTH.

At the time of the field work in June 2006, some changes were taking place, with co-operation on collection between FPME, Georgis and the Zege Fish-for-All association and some switching of established trading relationships. All operators (collectors and fishermen) were experiencing rising fuel costs, leading to reluctance to make daily journeys between the production area and Bahir Dar. However, it was clear that the situation was not stable and more changes were likely. Note too that none of the collector vessels has ever been willing to travel further north to Nabaga and the fishermen operating from Nabaga complain about the distance they must go every day to sell their catch (depending on conditions this takes 1.5–2 hours each way).

As far as the team is aware, the only other collector vessel operating on Lake Tana belongs to Stefanos, a well-known trader active in the northern half of the lake.

The collector vessels land their catch at Bahir Dar (with the only exception being an allegedly temporary arrangement that came into effect in June 2006, whereby the Zege association will land its catch at Zege—a small village, located to the northwest of Bahir Dar, less than one hour by road).

The fish landed by Tana Haik I Fishing Co-operative is filleted and frozen as soon as it is landed, with most of the catch generally frozen by mid-afternoon, if not earlier. A superficial assessment of handling conditions, gained through observation on several

occasions, suggests that hygiene standards are quite good: fish is immediately transferred from the boat to the adjacent packing shed; the shed is continually washed out; the women packers wear protective clothing; appropriate packaging is used; and the fish is frozen as soon as it has been filleted and packaged. Around 65% of the Co-operative's annual catch of roughly 300 t (weight of whole wet fish) is usually sold to FPME (which has cold storage facilities for 15 t at the Co-operative landing),<sup>15</sup> so although FPME's own vessel landings were not observed, the operation should be similar. The Co-operative itself also owns chest freezers, housed in its buildings at the landing.<sup>16</sup>

The Zege Fish-for-All association does not have freezing capacity, so it sells its catch to Georgis or FPME (whoever is offering the higher price). Georgis has chest freezers in Bahir Dar and again, on landing, fish is filleted and frozen. Whilst fishermen may opt to sell their catch to the Co-operative's collector vessel at Rema Medhane Alem (from where it reliably collects four days/week), the Co-operative does not buy fresh fish at its Bahir Dar landing (apparently to assure the quality of the fish it handles).

There are two other ways in which fish enters the Bahir Dar marketing system. Although not investigated as part of this study, some fish is landed by local *tanqwa*—for home consumption and local sale. More significantly, note the emergent importance of Enfranz as a landing point, serving the Bahir Dar and Addis Ababa trade (see discussion in the previous section).

## 4.3 Bahir Dar–Addis Ababa trade

### 4.3.1 FPME

The main supplier of fish from Lake Tana to Addis Ababa is the FPME. About 30% of the fish handled by FPME nationally is sourced in Lake Tana. All of its barbus and most of its tilapia and catfish comes from Lake Tana. This represents about 300–400 t/annum (weight of whole wet fish). The Tana Haik I Fishing Co-operative is FPME's main source of supply on Lake Tana.

Usually, FPME buys all the Co-operative's catch three days per week. The frozen fillets are then held in cold storage in Bahir Dar, or sent to its headquarters in Addis Ababa (depending on the market situation), or sold through their market outlets in Bahir Dar (2) or Gondar (1). Fish sent to Addis Ababa (90% of the fish purchased by the Bahir Dar

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15. The co-location of FPME and co-operative facilities reflects the historical (pre-liberalization) links between the formerly government-supported producer co-operative and a traditional parastatal. ARARI's Fisheries Research Unit also has its premises here.

16. Depending on the time of year, and hence demand for frozen fish, catfish landed by the co-operative's collector vessel may be sold to a dried fish trader, and the product dried at the landing.

branch) will be subsequently sold through its 13 retail outlets there (and in Debre Zeit), or to institutional buyers. The Ethiopian market has been growing steadily, but the volume of catch handled by FPME has declined and market share has fallen considerably (to now roughly 8% of fish entering the marketing system nationally).<sup>17</sup>

FPME has refrigerated transport used to take fish from Bahir Dar to Addis Ababa (and other routes)—a round-trip operation that takes an astonishing 4–5 days (travelling empty from Addis Ababa, loading in Bahir Dar, returning and unloading), although a car can cover this route in 10 hours (one way).

Despite its superior facilities, the FPME has lost market share to smaller-scale more flexible operators, albeit unable to operate a cold chain. Although exposed to competition, this does not seem to have translated into effective strategies to win back market share and reduce costs (possibly reflecting a feeling within the organization that the government would not let it fail).<sup>18</sup> Its retail outlets operate from unmarked premises, with no attempt at advertising. Retail pricing seems to be inflexible, irrespective of market conditions and inability to turn over stock in locations where there are other retailers selling at lower prices. Its transport operations appear to be high-cost (see above). It is not even able to meet the orders of large institutional buyers, which would normally represent prized ‘bread-and-butter’ customers (regular high volume buyers, associated with significantly lower transaction costs for the vendor, once the initial contracts have been set-up). There is no indication that the organization has adapted its operations to the changing marketing environment or has introduced new products or reviewed and made changes in its retail outlet network.

During June 2006, FPME could not reach agreement with the Tana Haik I Fishing Co-operative on prices, leading to a (most likely temporary) break-down in their long-established trading relationship. The FPME seemed confident of its position, in the knowledge that at that point it had plentiful stocks of frozen fish. It failed to reach agreement with the Zege Fish-for-All association too, its other main source of Lake Tana fish. This may, of course, be posturing to limit upward pressure on prices, but given that few fishers can land fish of the freshness required by FPME, and Lake Tana is its most important supply source, this would seem to be a risky strategy—particularly as FPME continues to lose market share. The manager in Bahir Dar indicated that if need be FPME would operate its own fishing vessels on Lake Tana.

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17. FPME argues that its operations should not be compared with those of other traders because it does not buy small fish caught with illegal gear (small mesh size nets). It argues, moreover, that capacity limitations on cold storage and transport have prevented it from keeping pace with increases in demand.

18. Earlier in 2006, private investors approached government to buy FPME but so far, there is no indication of any imminent change in its status.

### 4.3.2 Other traders sending fish from Lake Tana to Addis Ababa

The rest of the fish traded from Lake Tana to Addis Ababa is a much more *ad hoc* trade, though cumulatively the volumes are quite significant.

The team identified the following traders:

- one trader currently sending around 4 t (frozen filleted weight)/week to Addis Ababa, including recent purchases of fish from Tana Haik I Fishing Co-operative (so these volumes are atypically high); he has chest freezers in Bahir Dar (at the landing) and cold storage in Addis Ababa; however, he sends frozen fish fillets overnight from Bahir Dar by normal truck (with no ice); he sells to 15 hotels and 5 supermarkets in Addis Ababa; he has no retail outlet;
- one trader operating in the southeastern part of the lake, with freezer capacity in three road-side locations (including Woreta in Fogera *woreda*), currently sending about 0.5 t/week of frozen fillets to Addis Ababa;
- traders located in Enfranz on the eastern side of the lake, but further north; one trader is particularly dominant (5 of the 9 operations there are actually his agents); it is difficult to estimate volumes but their combined chest freezer capacity probably exceeds 5 t and can be filled in 1–5 days, suggesting weekly turnover of at least 7 t; frozen fish fillets are sent from here to Addis Ababa, Bahir Dar and to Gondar (though the latter is a less important destination) using normal trucks with no ice; the Addis Ababa share of this trade must be at least 50%.

Ignoring the first of these traders (whose operation has essentially taken over the trade usually passed through FPME), it is clear that the smaller traders are cumulatively responsible for at least as much frozen fish traded from Lake Tana to Addis Ababa as FPME. A very crude estimate of total weekly volumes (i.e. all three sources identified above) suggests about 8 t of frozen fillets (roughly 20 t of whole wet fish),<sup>19</sup> with considerable seasonal variation in this. If those volumes were maintained for, say, two-thirds of the year, this would amount to an annual trade of 680 t fish (weight of whole wet fish). This suggests that, although important to FPME, Lake Tana fish still remains relatively insignificant in overall market volumes in the capital, and indeed this was the impression gained from discussions with individual traders in Addis Ababa.

On the market in Addis Ababa, there are certain perceptions amongst traders about Lake Tana fish:

- fish size is larger and therefore favoured
- the costs are considered high (and, for some traders, prohibitive), and
- quality is considered poor (several interviewees mentioned the off-smell).

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19. The filleting percentage obtained by FPME is 45, 34 and 41% for catfish, tilapia and barbus, respectively.

Whilst some of the Enfranz traders have regular customers (traders/retail outlets, hotels, restaurants) to whom they sell in Addis Ababa, much of this trade takes place on a day-to-day basis, with trader decisions reflecting day-to-day market conditions.

## 4.4 Bahir Dar market

The main suppliers of the Bahir Dar market are:

- FPME (roughly 10% of its supplies go to the local market and Gondar)
- Tana Haik I Fishing Co-operative (roughly 35% of its catch is sold on the local market)
- Georgis, a local trader-cum-fishing organization, with a collector boat, and current purchaser of the Zege Fish-for-All catch, and
- the other traders mentioned above (with road-side operations in Enfranz and at other locations on the eastern side of the lake), who sell a portion of their supply to local markets.

This catch is sold principally to local restaurants and hotels (including those in the small towns north of Bahir Dar), with Bahir Dar and Gondar the largest local markets. Bahir Dar and Gondar also have specialized retail outlets (both have at least four). Fish sold to retail outlets and to hotels/restaurants is usually filleted and frozen.

The urban markets in Gondar and Bahir Dar are both growing. Both are important and expanding centres for tourism and Gondar has recently seen the opening of a number of new retail outlets. The volume entering these markets from Lake Tana exceeds that sent to Addis Ababa, by at least a factor of 2 (not counting fish caught for home consumption or traded in the fishing village).

## 4.5 Marketing constraints

These inter-related points have been mentioned above so are just summarized here:

- Lake Tana fish is relatively expensive compared to other lake fish on sale in Addis Ababa
- limited lakeside access and utilities (electricity, clean water, communications) restricts the points at which fish can be landed and contributes to relatively high costs for landed fish
- the distance to Addis Ababa makes this a more expensive source of fish than some other lakes and adds risk of spoilage, and
- fish from Lake Tana has a bad reputation for quality (off-smell).

Two other points should be noted. Current instability in trading relationships and fishing activity, combined with heightened competition, suggests that margins are relatively low. Improved organization amongst fishermen and traders, including the development of contracts, might lead to improved and smoother market development.

A number of market participants also indicate capital constraints, expressing interest in acquiring, e.g. large cold storage facilities and refrigerated transport. However, apparently low margins in the current trading system suggest that very careful analysis of the returns to such investments would be needed.

## 4.6 Women and post-harvest handling

Women have a role in post-harvest handling of fish entering the frozen fish marketing system. In Bahir Dar, they are responsible for filleting and packing of fish traded by Tana Haik I Fishing Co-operative and FPME. When fishers sell their catch to road-side traders or traders buying fish in the fishing communities, women sometimes assist with filleting. In Enfranz, one of the road-side traders is a woman. A lot of the fish retail outlets visited in Bahir Dar, Gondar and Addis Ababa were staffed by women. Women are also involved in the preparation of fish meals—whether in the home, or in hotels and restaurants.



## 5 Conclusion and recommendations

### 5.1 Markets for frozen fish in Ethiopia

Although per capita consumption of fish is very low in Ethiopia, there is steady growth in demand reflecting population increase, rising incomes and a shift in preferences. The main areas of consumption are Addis Ababa and the populations and towns close to the main production areas. Fish consumption is strongly linked to the fasting traditions of the Ethiopian Orthodox church: most people consider that fish can be eaten on days when meat is not allowed (Wednesdays, Fridays and during the fasting months). Under relatively conservative assumptions, aggregate demand for fish could be expected to grow by around 44% over ten years, but there are some indications that demand is growing even faster than this.

Historically, Addis Ababa has been supplied from the lakes in the south of the country. There is, however, a widely-held view that these lakes are now over-fished and market participants report growing difficulty in sourcing fish over the last 2–5 years, suggesting that demand is now growing faster than supply.

### 5.2 Competitiveness of Lake Tana fish and competition in the marketing system

Lake Tana is considered a rich source of fish, which generally does not yet show signs of over-fishing, but it is a relatively high cost source. With tightening in the market and rising prices, fish traders have started to take more interest in Lake Tana and a number of new small-scale operations have developed. High costs stem from: high landed costs because there are relatively few places where fish can be landed (where there is both access and amenities); the costs associated with shipping the long distance to Addis Ababa; and spoilage associated with the time lapse from capture to freezing and during transit to Addis Ababa. Thus, although the fishery is known for its larger size fish, it has a reputation for high prices and poor quality.

Current instability in the production and marketing system suggests that the system itself is relatively competitive, with affordability in the end-market (in particular, Addis Ababa) exerting pressure on prices.<sup>20</sup> Certainly there are many buyers and many sellers (one condition for a competitive market) and although the plant owned by FPME should confer

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20. FPME is the single largest supplier of frozen fish to the Addis Ababa market, though cumulatively the volumes handled by other traders exceed that handled by FPME. There is clearly relatively high concentration in this market (the four largest companies accounting for more than 40% of market share) though, as noted above, current instability suggests that the system behaves quite competitively.

advantage, in practice it appears to be a high cost operator, that is losing market share and slow to respond to changing market conditions.

### 5.3 Dried fish produced from natural seasonal ponds

The team was asked to briefly assess the importance of this activity. In Fogera *woreda*, the fishing and processing of dried catfish is significantly more important than either of the other two main fisheries: river barbus (which is an illegal but significant fishery) and the Lake Tana fishery. The seasonal dried catfish trade (ponds are fished February–May) employs as many as 600 fishers and their households (including women who are involved in the preparation and drying of fish). From a livelihoods perspective it is very important in that: it involves large numbers of people including women; it is a dry season activity; and can be undertaken in less accessible (and hence less advantaged) communities because the product has a long shelf-life. The trade, moreover, seems to be growing in importance:

- Nabaga, with its two ponds, has now been able to market its catch for three seasons (whereas previously the catfish went to waste), with the cost of the lease on the pond having risen substantially in successive years
- Chawhit, on the northern side of the lake, is a dried fish trading centre; there are now about 40 traders there and 6–7 years ago there were none
- fish drying is increasingly visible around the lake (Sewmehon Demissie, co-author, personal communication)
- drying activity continues even during the rainy season (albeit with more difficulty) indicating strong market demand; on the northern shore, the team saw fish on lines in sheds and at Enfranz, fishers indicated that they use salt to hasten drying during the rainy season
- improvements to the road to Sudan (via Metema) have apparently helped open up market opportunities there, and
- there are market opportunities in other parts of Ethiopia, allegedly where traditional sources of fish are no longer available because of over-fishing.

These findings confirm the preliminary impressions gained during the February 2006 visit, i.e. that further investigation of this fishery and associated trade may help identify important entry points for significant development of livelihoods in Fogera.

### 5.4 Improving livelihood opportunities associated with the Lake Tana fishery

In this section, a number of recommendations are made on areas of intervention with scope to improve the opportunities generated by this commodity system, for the benefit

of fishers, post-harvest workers (including women), traders and consumers. However, note that the system is relatively unimportant for the communities in Fogera *woreda* (six fishermen and perhaps a few additional *tanqwa* fishermen sometimes able to sell their catch to traders) and is likely to remain so pending any major improvements in accessibility. Even if some of the suggestions below improve the profitability of fishing activity in Fogera *woreda*, other parts of the lake are likely to retain a cost advantage. These recommendations would, however, benefit other fishing communities on Lake Tana and elsewhere in Ethiopia. (As noted above, both the seasonal ponds and the illegal river barbus fishery make a much more significant contribution to livelihoods in the *woreda* than the commercial lake fishery.)

No separate recommendation is made regarding opportunities to improve women's livelihoods because this 'lens' should be part of the way in which each of the following recommendations is explored. Post-harvest activities are more likely to involve women than fisheries capture (at least where the latter involves boats), but nonetheless the way in which women are likely to be involved (or could be helped to benefit) should be given explicit attention in work focusing on the following areas.

#### 5.4.1 Improving the quality of frozen or fresh fish

Since Ethiopia does not have strong fishing and fish marketing traditions and FPME's operations were always based on frozen fish, there seems to be very little interest in or knowledge of the use of ice and insulated storage to improve quality (on-board, upon landing, in transit, and at the retail outlet). Subject to the recommendations of a fish handling expert, it is suggested that trials be conducted with fishermen and traders to test the feasibility (technical and financial) and acceptability of the use of ice and insulated storage. There may also be scope for improvements via the use of low-cost evaporative cooling.

#### 5.4.2 Fisher groups: credit and inputs, marketing, information and resource management

There are numerous benefits stemming from collective action in fisheries. These include: improved access to credit and inputs, scope for collective marketing and potential to exert more market power, shared access to other services too costly to supply/buy-in individually and improved opportunities for effective resource management. Tana Haik I Fishing Co-operative in Bahir Dar seems to be a very professionally-run producer co-operative, operating in the pure commercial sense of a members' co-operative. It nonetheless struggles to identify alternatives when its main buyer switches sources. It has

difficulty accessing credit and it has not been able to acquire sufficient motorized boats to meet the demand of its members. There could be considerable benefits from working with the Co-operative and other fisher groups, in a participatory way, to strengthen their capacity to identify solutions to the problems they face. Indicative areas of intervention could include:

- rural finance and particularly the extent to which group savings could be used to leverage other sources of credit
- bulk purchase of inputs or improved access to inputs via credit mechanisms
- alternative marketing strategies, including the development of trading relationships with institutional buyers, improving the quality of transported fish and developing alternative products (with linked scope to expand the benefits of the fishery to a wider group, including women)
- possible scope to improve co-ordination and reduce fuel costs by the selective use of mobile phones and, perhaps, vehicles to collect fish, and
- developing rapid community-based fish resource assessment methodologies and adaptive management strategies.

Note that if any steps at all are taken to improve the marketing of fish produced in Lake Tana (i.e. relating to quality, product range, market information or producer groups), there must be an accompanying focus on resource management (see last point above). In its absence, the Lake Tana fishery is likely to suffer the same level of over-fishing that has characterized the expanded operations on the lakes in southern Ethiopia. Methodologies developed for Lake Tana would also generate wider benefits for other fisheries and fisheries-dependent populations in Ethiopia.

### 5.4.3 Market information

Market information systems, particularly for agricultural commodities (broad sense) are not easy to implement effectively. Too often, the information is not current or does not include sufficient detail on product characteristics. This is particularly true of fish. In addition to the normal supply, demand and location factors that influence prices, fish prices vary depending on quality, size of fish (different size fish may have different per kg prices), how it has been prepared (filleted, gutted, headed, skinned etc.) and time of sale (fresh fish usually trades at a discount later in the day).

Yet there is certainly scope to improve information in the frozen fish marketing system. The Ethiopian market for fish is subject to a number of co-ordination problems associated with very marked shifts in demand (fasting periods and fasting days), multiple sources of fish each with different seasonal patterns of supply (affecting catch size and species), constraints on storage capacity (frozen fish), no wholesale market for fish, and

many different actors at both production and marketing levels. Improved information could increase the net worth of the sub-sector via efficiency gains, increased prices and volumes, or reduced spoilage. During the field work in June 2006, there were simultaneous reports of insufficient supply in Addis Ababa and difficulty in marketing fish from Lake Tana.

It is suggested that the scope for improved information (type of information and *modus operandi*) be explored in close consultation with actors in the production and marketing system—keeping in view the need for systems that are relatively low cost, not overly complicated (and hence prone to failure), and preferably financed from within the industry.

#### 5.4.4 Expanding the product range

The shifts in the market may present opportunities for niche marketing of higher value products including fish pickles and or lightly smoked fish. Through discussion with hoteliers, supermarkets and traders, potential products could be identified for test production and marketing. It is very important that such trials be conducted with the private sector, whose experience of the market will be critical. This is particularly important with product development, because it is quite difficult to persuade people to (rapidly) change their eating habits and this is not an area of work in which the public sector has a strong track record. Indeed, there have many ill-fated projects focused on the development of new products. In countries with a more developed food industry, such research would be considered too 'near-market' for public sector involvement.

### 5.5 Improving livelihoods associated with the seasonal ponds and dried catfish

Within Fogera *woreda* this is easily the most important source of fisheries-related livelihood. It generates the most aggregate income and involves large numbers of people, including women. The production of a dried product is also an appropriate adaptation to less advantaged, seasonally inaccessible communities. Preliminary observations and enquiries indicate that the dried fish trade is currently experiencing rapid growth in Ethiopia.

It is recommended that IPMS follow-up with a market study for dried fish, to explore in more detail the livelihood potential it offers. This should be done during the period February–May when the seasonal ponds are being fished.

## 5.6 Exploring the potential for sustainable fishing of river barbus

This fishery is clearly important to large numbers of people in Fogera *woreda* and has particular significance to the most vulnerable households during the lean season. However, the illegal nature of this fishery has made it difficult for government officers to work with fishers to explore potential solutions to this dilemma.

It is suggested that this be revisited—initially in discussion with government and research officers—to examine the scientific parameters on which the ban is based. A closer examination is then needed of the fishing activity to yield information on timing, numbers involved, size and nature of fish catch, and its value. As the present fishery yields such low value fish, within the context of a participatory investigation, it may be possible to identify win–win solutions whereby both net worth and fish resources can be improved. Of course, there may not be such a fortuitous solution but certainly more information is needed before reaching that conclusion.

## 5.7 IPMS and capacity development

Implicit in these recommendations is an emphasis on participatory modes of working and building capacity in government institutions for improved understanding of markets. The potential identified by this study can only be realized if the interventions are developed and tested in close collaboration with fishers and traders. In taking this work forward, IPMS should place a strong emphasis on building capacity to work effectively with communities and the private sector. Improving the understanding of markets and developing government capacity to play a facilitating and enabling role in market development are also important areas of emphasis.

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Annex 1. Fish prices: ETB/kg whole fish, June 2006 (unless otherwise indicated)

	Tilapia	Catfish	Barbus	Source	Comment
Producer prices	3.55	2.65	1.55	FPME	Bahir Dar landing, February 2006
	3.25	2.20	1.10	Fisherman	Collector boats—near Fogera
	2.50	2.00	1.25	Fisherman	Collector boats—near Fogera
	3.00	1.20	1.10	Zege FFA	Collector boats—near Fogera
	3.50	1.50	1.20	Zege FFA	Zege landing
	4.00	3.00		Co-op	Bahir Dar landing, up till June 2006
	2.75	1.50		Co-op	Bahir Dar landing, new price buyer proposed
	3.25			FPME	Bahir Dar landing, agreed price
	3.74	4.05	2.87	Trader	Northern lake—fisherman sells filleted fish
	3.40			Trader	Enfranz on road—fisherman must fillet fish
			0.50	Fisherman	Approximate—illegal river barbus
Retail/Bahir Dar	21.00	13.00		FPME	February, fillets
	15.00			Interviewee	Reported price fillets
	17.00			Interviewee	Reported price fillets, March
Retail/Gondar	21.85	16.20	10.50	FPME	Fillets except barbus (whole, gutted, skinned)
	15–20	12.00	9.00	Trader1	Fillets (except barbus as above)
	18–20			Trader2	Fillets
Retail/Addis Ababa					
	13–25			Trader1	Fillets—price range over year
	6–12			Trader1	



	Tilapia	Catfish	Barbus	Source	Comment
	6–9			Trader2	
	24.00			Trader3	Fillets, maximum price over year
	22.00			Trader4	Fillets, maximum price over year
	34.00			FPME	Fillets, maximum price over year
	7.00			FPME	Minimum price over year
		16–21		FPME	Fillets—price range over year
	27.00			Hotel	Paid by hotel, delivered, fillets
Dried fish trade					
		0.90		Fisherman	Nabaga, head-off for drying
		1.20		Fisherman	Nabaga, head-off for drying
		10.00		Trader1	Enfranz, buying dried fish
		20.00		Trader1	Selling dried fish in N Ethiopia
Other					
Filleting	0.20			Trader	Cost of filleting/kg whole fish at landing
Collection on lake/kg	0.43			FPME	Costs of fuel/skipper—assuming 1000 kg fish
Collection on lake/kg	0.86			FPME	Costs of fuel/skipper—assuming 500 kg fish

## Annex 2. Guidelines for market research in Addis Ababa, June 2006

Visit the four fish trading areas: Mercato + Piazza + Abinet + Bole Road/Tele area  
Note who you talk to (not necessarily name—just trader1, trader2 etc.—and which area).

Talk to some of the Enterprise shops too, if possible; ask supermarkets source of their fish.

Talk to lots of people (traders—ambulant and fixed, customers, transporters); keep asking the same questions. Also observe.

Ask price questions at end—do not ask the same trader about purchase and sale prices.

Use your judgement on whether or not to take notes—but if you don't, then you must make notes immediately after the interview.

1. Status and trends in the market (NB—don't confuse seasonality/long-term trends)
  - Demand—is demand increasing or static or decreasing? Over what period has this been happening? What is the evidence for this?
  - Are there changes in products people want? More filleted fish? What about whole fish? What types of fish? Quality of fish? (and what do you mean by 'quality'?)
  - Customers? Who buys fish? What sort of people? What sort of fish do they want? (quantity, fillets, species, quality?)
  - Hotels and other big buyers? Do they buy here? How do they get their fish? Do they place regular orders? Do the supermarkets buy from these traders?
  - Enterprise vs. other traders? Are the customers different? How?
  - Supply—are there changes in supply? Over what period? What sort of changes? Shortage? Where from? Types of fish? Size of fish? Quality of fish?
  - Changes in market share of Enterprise vs. other traders? Over what period? What is the evidence for this?
  - Do people buy fish from other places?
  - What are the seasonal patterns?—in supply and in demand.
2. Marketing system
  - Selling prices? Note the form [filleted/whole etc.].
  - Pricing policy—how do prices vary? Through the day/season/week?
  - Perhaps ask about purchase prices—take care to note what this covers (where the fish is bought? What form? Who pays transport to Addis? Are there storage costs? etc.)
  - Losses—unreliable electricity supplies? Other losses? 'crisis sales' (low cost) to get rid of large quantities of fish when they have too much? What are there strategies?
  - Purchase strategies—contracts? Regular arrangements? Or more *ad hoc*?
  - Transport costs—see if you can obtain information.

3. Information about these four trading areas
  - How many traders are there in each area?
  - What capacity do they have? (number of freezers? how much fish sold per day/week/month/year?)
  - Who shops in each area? Different customers? Differences in fish sold in each area?
  - Describe the selling area—old/new, types of shops, hygiene, specialized or combined with other non-fish shops; are these retailers or wholesalers? Some of each? Combined?
4. Information about the role/presence of fish from Lake Tana
  - Perceptions of Lake Tana fish (price, species, size, quality, availability, seasonality?)
  - Is anyone buying Lake Tana fish? What sort of fish? From whom? All year round?
  - How does Lake Tana seem to compare with other sources of fish?



Improving Productivity and Market Success (IPMS) of Ethiopian farmers project  
Working Paper

1. Berhanu Gebremedhin, Hoekstra D and Azage Tegegne. 2006. *Commercialization of Ethiopian agriculture: Extension service from input supplier to knowledge broker and facilitator.*



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