

Smoked marine fish from Western Region, Ghana: a value chain assessment



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Cover Photo: Smoked fish seller, Kumasi Central Market, Ashanti Region, Ghana

Cover Photo Credit: Alan Pulis

CONTENTS

Acknowledgements

Acronyms

Executive Summary

I – Introduction

II – Overview of fish marketing in Ghana and in Western Region

III – Fisheries value chain mapping: actors, functions and linkages

IV - Governance and power relations in the value chain

V – Conclusions, discussion and recommendations

References

Annex A: Terms of reference for the Western Region Fisheries Value Chain study

Annex B: Field team itinerary

Annex C: Issues probed during field work

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ACRONYMS

AECID	Spanish Agency for International Development Assistance
CRAN	Christian Relief Aid Network
FAO	Food and Agriculture Organisation of the United Nations
GHAPOHA	Ghana Ports and Harbour Authority
Gh c	Ghana cedi (Gh c 1.5 = approximately US\$ 1, March 2011)
HP	horse power
ICFG	Integrated Coastal and Fisheries Governance [Initiative]
IUU	Illegal, regulated and reported [fishing]
MCS	Monitoring Control and Surveillance
NGO	Non-governmental organisation
SAT	Sinapi Aba Trust (a micro-finance institution)
SFLP	Sustainable Fisheries Livelihoods Programme
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

The value chain analysis focused on smoked marine fish - overwhelmingly the most important fish product originating in Western Region. Smoked fish from Western Region is mainly destined for the domestic market where demand is very strong. Small quantities of smoked fish are destined for markets in Togo, Benin and Nigeria.

Although there are many stakeholders providing a myriad of services (/goods) at each point in the value chain, the chain is relatively straightforward seeming to mostly involve only fishers, fish traders at the landings, fish processors and retailers. Power is strongly concentrated in the hands of fish traders (at the landings) who pre-finance fishing operations, buy from the fishermen and sell to fish processors. Market retailers are also powerful. An informal “closed shop” seems to apply to both groups;

The power of the fish traders may also be derived in part from a certain asymmetry of price information and collective action. Most fishers can only land at their own village (to repay the fish mothers but also because this is the convention), whilst the fish mothers contact their colleagues at other landings to check on prices (influencing both the prices they offer – and possibly giving them an additional option to buy fish elsewhere, particularly someone else can stay on-hand to collect debts from fishers.

There is no physical loss of fish, since all fish finds a market (fish that is spoiling is diverted into lower value processing or if very bad, sold as poultry feed). This seems to hold true all year round, although clearly financial losses (from “down-grading”) are higher during the peak landings season.

With the exception of the fish destined for regional export markets (visually more appealing and commanding a premium of roughly 20%) there does not seem to be any significant market at present for a premium smoked product. Up-market supermarkets do not generally stock smoked fish and it seems that most people buy fish in markets. Supply to the regional market is moreover carefully managed to avoid a glut (large suppliers such as Cape Coast and Elmina alternate the days in which they send fish).

The final section of the report presents a discussion of key issues and potential for livelihood enhancing value chain improvements. Possible risks associated with any change to the *status quo* are also discussed. Suggestions for pilot interventions focused on four topics are outlined:

- possible scope for providing fishers with more information on landing prices and potential for them to land their catch at one of several landing sites (issues of convention and pre-financing would have to be overcome);
- opportunities for micro-finance for fishers and perhaps for fish processors;
- financial losses from “downgrading” of fish and whether these could be reduced by improved handling; and
- opportunities to strengthen collective action by fishers and processors.

Pilots will be developed in close discussion with the ICFG partners. It is strongly recommended that these are designed in close consultation with stakeholders, with clear objectives, and implemented through existing service providers, with close monitoring of outcomes.

I. INTRODUCTION

1.1 Background

The study reported here was conducted under the auspices of the Hen Mpoano initiative in Western Region, Ghana. Hen Mpoano, also known as the Integrated Coastal and Fisheries Governance (ICFG) Program, is funded by USAID and implemented by the Coastal Resources Center (University of Rhode Island) in partnership with Friends of the Nation, Sustainamatrix and the WorldFish Center. Initially planned as a 4-year initiative, the work reported here was conducted in the ICFG program's second year.

The ICFG program is working to support the Government of Ghana achieve its development objectives of poverty reduction, food security, sustainable fisheries management and biodiversity conservation. It aims to contribute to the achievement of the following vision:

Ghana's coastal and marine ecosystems are sustainably managed to provide goods and services that generate long-term socio-economic benefits to communities while sustaining biodiversity.

The program includes work on fisheries value chains in order to identify scope for livelihood improvements and poverty reduction. The work reported here was conducted by a WorldFish Center team in close discussion with the ICFG team.

1.2 Terms of reference

Full terms of reference are attached at Annex A. In summary, the value chain study aimed to:

1. Identify and describe the products and any distinct sub-groups that constitute the main focus for this study (smoked marine fish and fresh and/or frozen fish); where possible, provide an estimate of applicable product volumes (e.g., by landing or main market or for Western Region);
2. Map the chains and in so doing, identify the various actors, their functions and existing linkages in these fisheries value chains; identify and as far as possible describe any significant chains that lead into regional markets (without following the chains outside Ghana);
3. Make a preliminary analysis of the input-output structure and the distribution of margins and return on investment along the chain;
4. Make a preliminary assessment of the power relations in the value chain and how these affect the distribution of margins along the chain;
5. Identify significant trends and changes influencing the fisheries value chains

6. From the perspective of fish value chain livelihoods, analyse the constraints and opportunities in the value chain (from the point of initial sale at the landing);
7. Make recommendations on pilot interventions and partnerships with the potential to significantly expand livelihood opportunities in the value chains; and
8. Where apparent during the course of field work, note and describe any significant planned or mooted investments targeting the fishing economy in Western Region (e.g., new port or post-harvest infrastructure); where possible/apparent, make a preliminary identification of key levers and/or approaches that would improve the poverty impacts of such investments.

1.3 Methodology and field programme

Some value chain definitions

A value chain is a range of activities which add value to a product at each stage along the chain: from sourcing, to production, delivery, and final consumption (Kaplinsky & Morris, 2001). In its most basic form, a value chain can be condensed to three main activities, with so-called “vertical linkages”, as depicted in Figure 1 below.



Figure 1: Basic Value Chain

At each stage, there are a number of goods and services that are needed to transform and progress the product through the chain to the end consumer. These are all part of the fisheries value chain¹.

There are also other factors which influence the performance and efficiency of the chain – such as the policy context, infrastructure, financial services and/or projects implemented by governments or the private (including non-governmental) sector, as well as financial institutions. Though not directly shaping the final product, the enabling environment that these factors create influences the governance of the chain and the performance of the various activities and actors in the value chain. These linkages are referred to as “horizontal linkages”.

¹ Value chain analysis has strong parallels with marketing systems analysis or commodity systems analysis (or *l'approche filière* in French).

An improved understanding of value chains can contribute to the development of pilot livelihood interventions because it permits constraints and opportunities to be identified and elucidates the governance of the marketing system. Value chain analysis can help identify potential for “upgrading” (increasing value added, by improving the product, or producing it more efficiently or by adding additional higher value services). Given ICFG interests in promoting improved livelihoods for the poor and livelihood diversification in fishing communities, the present study was particularly focused on the potential to improve livelihoods within fishing communities and for low-income groups.

While developing the value chain, it will be important to consider how the terms and conditions of participation in the value chain of the poorest actors might be changed. At the same time it will be important to consider the livelihoods impacts this has for those excluded from the chain, those voluntarily not participating and those potentially being expelled from the chain due to the changes affected. Other so-called ‘horizontal’ impacts that are important to consider are the impact this has on the environment and gender relations.

Steps in the Ghana value chain study

In 2010, the WorldFish team, together with ICFG partners, had collected a lot of information at beach landings, particularly from fishermen. There had also been extensive discussion with government staff employed in fisheries at national and regional level. Preliminary information on fish marketing was also collected in 2010 (Finegold *et al.*, 2010) and further elaborated with desk research in 2011. Section 2 summarises those preliminary findings and highlights particularly the dominance of smoked fish, which informed the focus of the work reported here.

Value chain mapping was undertaken during fieldwork in March 2011², towards the end of the minor upwelling season (see section 3.2). Focusing particularly on those stakeholders covered less by prior work, this involved informal interviews with various stakeholders to elicit a detailed picture of the various actors and activities involved, the interactions between these actors, and the transformation of the product (fish) - both physically and in terms of value (see Table 1).

Actors in each of the landing sites visited were interviewed (e.g., fishers, fish traders and processors, authorities, ice suppliers) – starting with fishers. There was no strict list of landing sites to visit – it was updated regularly depending on the responses from interviewees, including key informants. The intention was to understand characteristic activities (and not to conduct an exhaustive survey of all landing sites). In place of a formal questionnaire (which can be off-

² Some aspects may need follow-up during the high season. Although there was a lot of fishing, processing and marketing activity being undertaken during March 2011, this is nonetheless a relatively quiet period compared with the mid-year peak season. This marked seasonality has a number of effects and allegedly (certainly plausibly) influences the power relations too (i.e., buyers’ market versus sellers’ market).

putting to respondents and gives less scope to probe and follow interesting leads), a checklist was used to ensure that key points were covered. These included:

1. *Involvement in the fishing industry*: this identifies the respondent's position in the value chain whilst also identifying any new roles
2. *Operational costs*: identification of inputs and their cost
3. *Relationship/links with other actors*: from whom inputs are purchased and to whom the output is sold. This not only identifies linkages with other actors but also any new actors which should be interviewed.
4. *Governance*: identification of institutions and actors (including any groups/associations) which influence actors' roles through rules, regulations, and traditional practices.
5. *Constraints and Opportunities*: issues that limit the functioning of the value chain in which there may be scope for improvement (e.g., anti-competitive practices, high losses, high costs, missing information etc).

Table 1: List of value chain interviewees, March 2011	
Interviewee	Number interviewed
Fishers	
Fishermen	10
Boat owner	1
Chief fisherman	1
Women traders at the beach	
Fish mothers	8
Queen mother	1
Fish smokers	20
Market retailers	20
Ice processing plant worker	1
Financial institution managers	2
Fishing harbour manager	1
Tuna Boat Association manager	1
Cold store owners	2

The team then “followed” the value chain – from the landing sites, to processing sites and markets (intermediate, final and border markets). Thus, landing and processing sites in Western

Region and Central Region were visited; markets in the same regions as well as in Kumasi, Accra and in Volta Region on the Togolese border; and additional information was subsequently collected from Tamale too. See Annex B for the itinerary.

More information on the issues probed is attached at Annex C and Table 2 summarises the principal field data collection methods used.

Table 2: Field data collection methods	
Site visits	A number of sites were visited to get an idea of how fish travels through the various stages in the chain (see Annex B).
Key informant interviews	These painted a picture of how the value chain works whilst identifying issues and other actors involved
Small group discussions	Particularly with market women and fishers
Direct observation	Apart from information obtained from interviewees, direct observation played an important role in confirming what was being discussed as well as in identifying interesting topics to query

As far as possible, all information collected from interviews was triangulated – through follow-up questioning, interviews with other actors, direct observation and literature view.

1.4 Reporting

Following this introductory section, the remainder of the report is organised as follows:

Section 2 – background on fish marketing, based on secondary data and work conducted in 2010

Section 3 – fisheries value chain mapping

Section 4 – power relations in the value chain

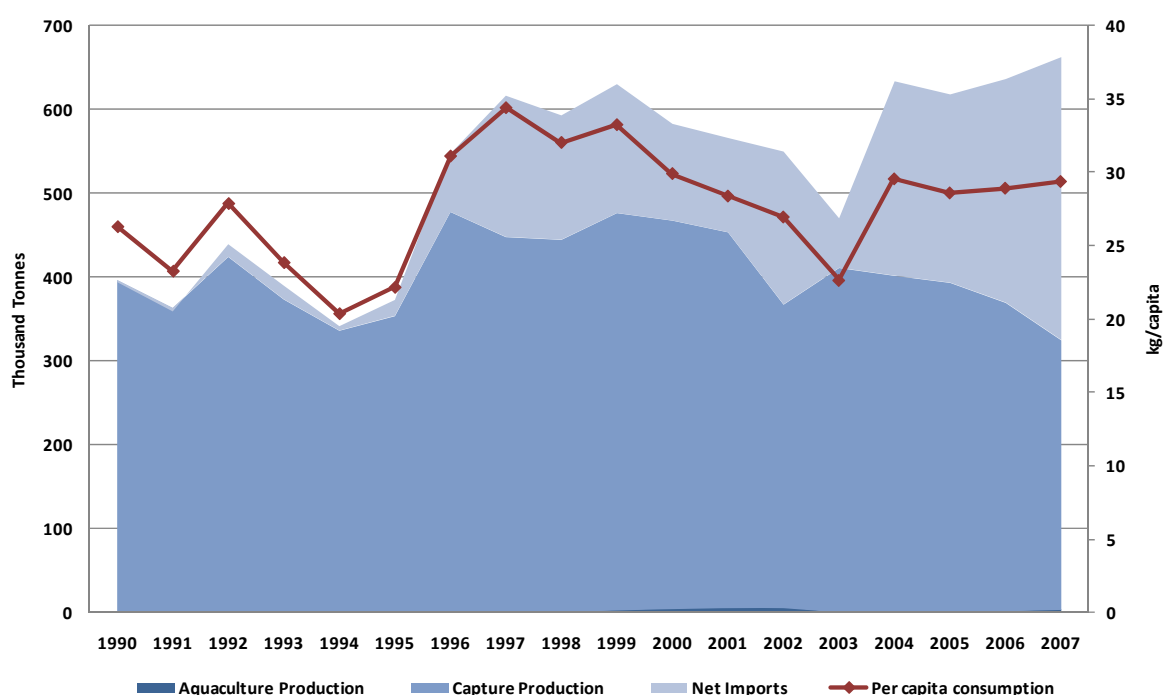
Section 5 – recap of key findings, discussion and recommendations.

II. OVERVIEW OF FISH MARKETING IN GHANA AND IN WESTERN REGION³

2.1 National overview

Fish is extremely important in the Ghanaian diet, accounting for 40-60% of animal protein supply. Fish is widely consumed throughout the country – as a fresh product near the landing sites and as smoked and dried fish in more distant markets. FAO data indicate an overall food fish balance of almost 680,000 tonnes (or nearly 30kg per capita) – see Figure 2⁴. A new study, however, suggests that freshwater fish landings from Lake Volta may be much higher than previously thought, indicating that average per capita fish consumption may exceed 40kg per annum (FAO and WorldFish Center, 2008). The marketing systems, although largely based on traditional products, are relatively well-developed and extend into neighbouring countries. The domestic market is, however, the most important market for Ghanaian fish production. Figure 2, which is based on FAO data, shows that an increasing share of the market is met from imports. (“Net imports” refers to imports less exports).

Figure 2: Apparent consumption of food fish in Ghana, by source, 1990-2007.



³ Section 2 draws on preliminary work conducted in 2010 (Finegold *et al.*, 2010) as well as desk-based research on the Ghanaian domestic market for fish undertaken during 2011.

⁴ FAO data on apparent consumption are derived from: production (capture fisheries and aquaculture) plus imports less exports plus/minus any change in stocks.

FAO statistics indicate that Ghana is a net importer of fish by value and volume (see Table 3 and Figure 3). Exports in 2007 were worth about \$61 million whilst imports were valued at \$171 million, whilst import volume exceeded export volume by a factor of 14. Although some of the informal regional trade may be under-reported, it is very clear that Ghana's dependence on imports has increased dramatically over the last 20 years. (In addition, the official data may give little clue to the movement of fish caught by the international fleet. Much of its catch is not landed in Ghana and there are also controversies concerning Illegal Unreported Unregulated (IUU) fishing).

Table 3: Ghana food fish trade volumes and values, 1990-2007

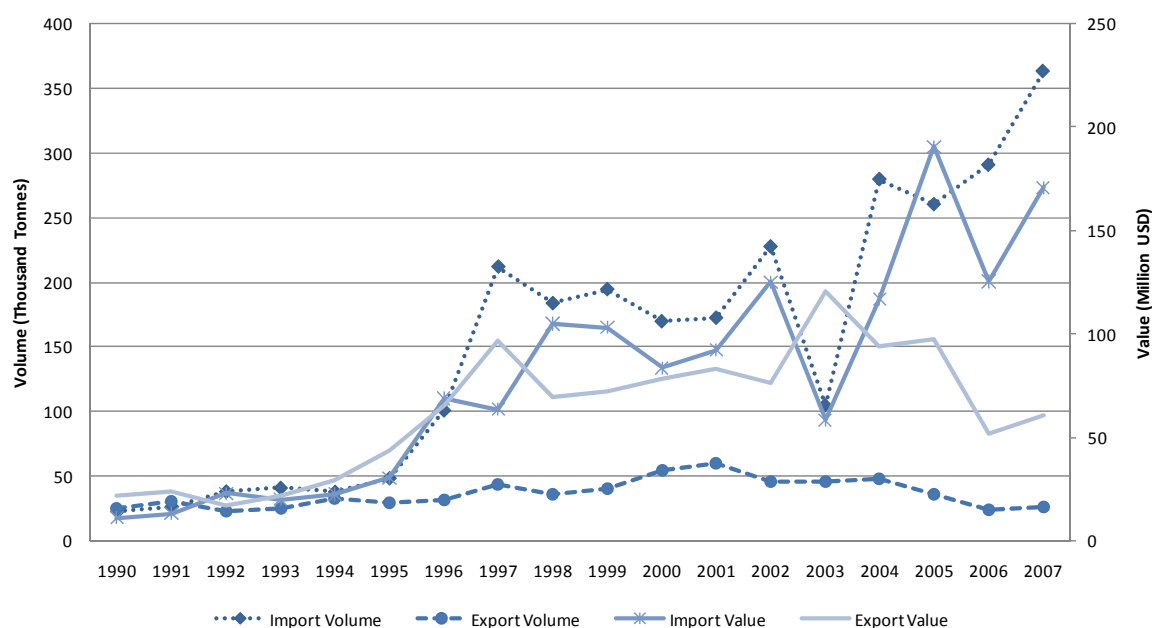
	1990	Annual Growth Rate (1990-2000)	2000	Annual Growth Rate (2000-2007)	2007
Import Volume (Tonnes)	22,698	22.29%	169,753	11.47%	362,974
Import Value (000 \$)	11,000	22.38%	83,640	10.74%	170,770
Import Unit Value (\$/kg)	0.49	0.08%	0.49	-0.66%	0.47
Export Volume (Tonnes)	25,413	7.96%	54,681	-10.19%	25,772
Export Value (000 \$)	21,591	13.77%	78,464	-3.53%	60,999
Export Unit Value (\$/kg)	0.85	5.38%	1.43	7.41%	2.37

Imported fish is mostly low value frozen pelagic blocks. Ghana is the world's 3rd largest importer (by volume) of such food fish. These fish are imported from all over the world, including Latin America and Namibia.

Information on the destination of official exports is hard to obtain. FAO indicate that important markets are European Union, Japan, USA, Canada, Hong Kong and Singapore, as well as neighbouring countries⁵.

⁵ http://www.fao.org/fishery/countrysector/FI-CP_GH/en

Figure 3: Food fish trade, Ghana, 1990-2007



2.2 Important markets for marine fish sourced in Western Region

With scarcely more than 10% of Ghana's population, but 30% of its coastline and perhaps 20-30% of the country's landing sites, Western Region produces marine fish destined for markets throughout Ghana and beyond. It is an important source of fish despite its distance from Accra. Kumasi and Accra are important end-markets, to which fish is sent directly from Western Region. Smoked fish from Western region is also traded in many rural areas, e.g., in Ashanti Region, in inland parts of Western Region and in Central Region (where it is consumed or sold-on). Limited amounts of smoked fish are also exported to regional countries and to Europe⁶.

2.3 Marketing systems and fish products

Most of the Western Region catch enters the processed (smoked) fish marketing chain⁷. Fish is purchased at the beach by resident traders, or by "short-term migrant"⁸ traders residing there

⁶ 20-30 importers in the UK, specialized in West African food products, import airfreighted smoked fish from Ghana and other West African countries (Ward, 2003).

⁷ No fish drying has been observed by the WorldFish teams during visits to landings (and adjacent processing areas) in Western region. However, some fish is fermented (see Section 3.2) and some fresh fish is fried for sale locally.

⁸ This term is used to distinguish these temporary migrants from the long-term migrants in Western Region, where many of the fishing communities have been settled for more than one generation by migrant fishers from other regions. Such short-term migrants or processors visiting for just one day tend to come from Central Region or from other places in Western Region.

temporarily during periods of abundant catch and low prices (sometimes sub-contracting the smoking locally, or it is immediately transported back to the home base of visiting traders and sold to processors there). These outcomes depend on relative prices, with traders juggling considerations of fresh and processed fish prices, as well as processing and transport costs, all of which will vary depending on market conditions.

Although some of the larger landings have cold storage facilities, only those in Sekondi seem to be operational at present for fish cold storage. Ice can also be purchased in Sekondi port – for use by boats and sometimes for transport of fresh fish to a more distant processing centre.

As elsewhere in Ghana, women are dominant in traditional fish processing and trade – be it in large- or small-scale operations. This position is long-standing as indicated by their traditional roles too (analogous to the Chief Fishermen), which, interestingly, include roles in coastal areas and inland markets (underlining the historical importance of fish trade in Ghana). At landing centres, the “konkohene” or Queen Mother (whose role dates to the early 20th century) sets or influences the prices at which all fish is sold from the boats on that day. Women traders may advance fishing trip costs to boat-operators and this will give them access to that boat’s catch.

There is some indication of erosion of these systems (e.g., in Sekondi, where prices are negotiated on an individual basis), particularly in places with improved landing facilities (allegedly in places where landing fees are payable) or where there are particularly successful and powerful fish mongers. More generally, there is some variation from place to place in precise roles and how the arrangements work in practice⁹, but the important role of women in fish marketing in Ghana is universal.

In Western Region, smoking is the most common form of processing. Women use so-called Chorkor kilns, where fish is slowly smoked on stacked racks, with relatively efficient use of fuel wood and producing a relatively evenly-smoked product. (The way in which the fish are prepared depends on the size and type of fish).

2.4 The economic importance of fisheries in Western Region

A noteworthy point, when describing the local fish economy in Ghana’s coastal areas is the number of people that are drawn into related activity and the extent to which it seems to drive all other activity¹⁰. Economic multipliers are generally categorised as: backward (i.e., the supply of goods and services that are inputs to the production process – such as boat-building or fuel); forward (those linked to marketing, such as processing and transport services); and

⁹ See, e.g., Britwum’s account (2009) of the gendered dynamics of marine fishing and marketing in Ghana.

¹⁰ 65% of Ghana’s population lives within 100 kms of the sea. Whilst clearly reflecting a number of factors (including agro-ecology) the importance of fisheries has also helped retain and attract populations to the coastal zone.

“consumption” (the economic effects of people simply spending their income on other goods and services). A visit to a landing site when boats are unloading reveals an astonishing array of economic activity, with ample examples of all three categories of multiplier (see Table 4).

Table 4: Economic linkages with fishing in Western Region	
Economic linkage	Activity
Backward	• an “outboard motor lock-up /guardian” service • boat-building activity • lots of people mending nets (presumably boat-hands) • numerous fishers and deck-hands (large canoes may have a crew of 25) – all paid on a catch share basis • shops selling spare parts, engine oil, nets • water trading (fishing boats will carry and fill water containers, for a fee, collecting water from nearby villages where water is less scarce) (linkage category is debatable) • workshops offering outboard repair services • traders, walking from boat to boat, selling a wide variety of fishing related goods (e.g., raincoats) and other items
Forward	• fish processing sites usually a hundred meters or so away, which in turn are purchasing fuel wood or paying porters to carry wood • fish traders buying from those boats (large amounts and small amounts) • hired transport (trucks, minibuses, taxis) • people renting freezer space or selling ice • porters – ferrying fish from the boats to the fish traders (taking a share as payment) • porters – ferrying the accumulated purchases of the fish traders to waiting transport or to near-by fish processors • small informal guest-houses (or people renting out space in their homes) • use of telephone services (mobile and landline) - (also “consumption” linkage)
Consumption	• a wide variety of other consumer goods sold from stalls or by ambulant traders (clothes, telephone cards, linen, kitchenware, toiletries, maps, books, stationery, jewellery, handbags, medicines, matches, cigarettes, newspapers, ironmonger goods, cassettes/ CDs, radio/“hi-fi”s, mobile phones, batteries, plastic bags, etc) • buildings or tented areas where videos are viewed • cafes offering food and drink • drinks being sold by ambulant traders • other snacks and processed food being sold from stalls • people selling “ready to eat” fruit (e.g., peeled oranges) • women cooking and selling food (at the road-side)

The list in Table 4 is only illustrative and certainly not exhaustive. Studies in rural Africa suggest that local agricultural employment and income multipliers are in the range 1.3-1.7 (i.e., new income in a rural area of say \$1 (perhaps from trading crops) will generate a further \$0.3-\$0.7 through multiplier effects). Local multipliers are strongest where recipients spend high shares of their income locally. There has been relatively little work done on multipliers in fisheries, but an SFLP¹¹ study in Ghana suggested that one fishing job created 7 additional livelihoods and FAO (2007) suggest that for every person employed directly in fishing, there may be an additional 4 associated “downstream” jobs. The household security effect is even wider – since each of these incomes will help support an extended family. Although fishing is becoming more difficult, there is no doubt that it nonetheless remains a critical economic driver.

These livelihood impacts are extremely important – particularly in the context of very limited alternatives for the coastal community. This merits emphasis moreover within the current discourse on “wealth-based fisheries management” which argues that marine fisheries in Ghana are only marginally profitable at best. Whatever the evidence for and against that position, the importance of fisheries as a (direct or indirect) source of livelihood for millions of people in Ghana should not be under-estimated.

2.5 New developments relating to fish marketing in Western Region

The Ghana Fisheries and Aquaculture Sector Development Plan (2010-2015) includes targets for “the promotion of value addition in the fisheries sector and the improvement of livelihoods in the fisheries communities”. It outlines three opportunities to add value (reducing post-harvest losses, reducing handling costs and producing higher value products) but suggests that careful consideration of sequencing is needed because, whilst fishing remains essentially open access, any increase in value will stimulate further entry into fishing and further increases in effort.

Initial investments are likely to focus on infrastructure at selected landing sites. Within Western Region, AECID proposes to support cold chain development with cold stores and a fleet of refrigerated trucks planned for Takoradi and Axim (with the intention to lease these to the private sector, according to Sciortino, 2010). A Ministry of Food and Agriculture/World Bank landing site needs assessment conducted in May 2010 (Sciortino, 2010) made the following infrastructure proposals for Western Region:

- solar lighting, an outfall (to divert sewage from the beach) and clean sea water (for washing fish) for Axim and Dixcove
- a new port at Axim (intended for use by naval vessels used for monitoring, control and surveillance).

¹¹ Sustainable Fisheries Livelihoods Programme

The World Bank infrastructure proposals would certainly seem to offer prospects to improve facilities in a way that would have widespread benefits. However, the way in which these improvements are implemented is certainly likely to influence the scale and distribution of benefits. It is alleged, for example, that in landing sites where improved infrastructure has resulted in landing fees, traditional price-setting arrangements have tended to be eroded.

With any such interventions, the prospects of a successful outcome are improved where:

- there is a good prior understanding of the existing system
- the intended beneficiaries are consulted and their views taken into account – not just on the initial ideas but on the nature and location of infrastructure (with all due regard for potential for elite capture), and
- the institutional arrangements are feasible and sustainable – and these too are worked out in consultation with intended users.

With respect to the planned AECID investments, very little is known about how the plants and trucks will be allocated and run. Normally, it would be assumed that such investments are best left to the private sector. If the private sector is to run but not own these assets, transparent and fair (most likely competitive) arrangements will be needed for the leasing.

Of possibly greater concern will be the new port, with a naval presence, at Axim – particularly as, over time, this might be expected to take on a security role with respect to nearby oilfields. Sciortino (2010) states that it “should be designed exclusively for MCS assets and vessels supporting other sustainable activities, such as cage farming, off-shore services and eco-tourism¹²”. Whilst this may create additional employment opportunities, there may also be sources of conflict with regard to marine and beach access and competition for marine resources.

2.6 Preliminary identification of fish marketing constraints

The WorldFish/ICFG work in 2010 highlighted potential issues to explore in the course of subsequent value chain analysis: (1) seasonality of fish catch and its implications for processing and marketing; (2) traders and processors keen to pursue additional sources of credit; (3) post-harvest losses; (4) transport and smoking capacity are sometimes insufficient; and (5) market and price volatility.

These issues are among those explored in more detail in subsequent sections of this report.

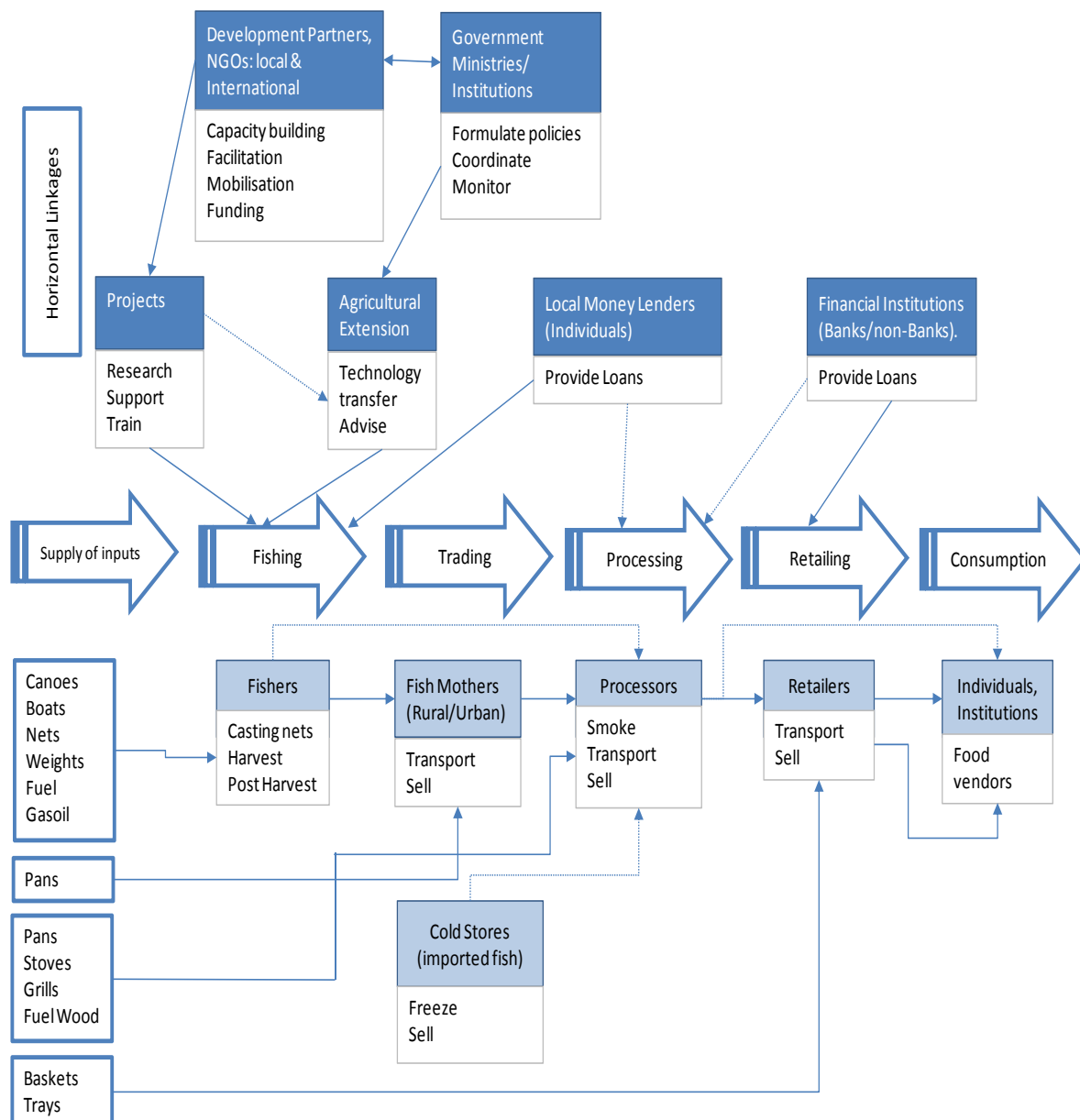
¹² Sciortino suggests that offshore services could include logistics, warehousing and diving for the oil industry, as well as support for offshore cage farms, and whale-watching and sports fishing for ecotourism.

III. FISHERIES VALUE CHAIN MAPPING – ACTORS, FUNCTIONS AND LINKAGES

3.1 Overview of the marine fisheries value chain

Figure 4 below gives an overview of the fish sub-sector and the structure of the value chain.

Figure 4: Ghana marine smoked fish value chain



3.2 Fishing and fishing input suppliers

At most landings in Western Region, marine fishing is dominated by small-scale fishermen (Finegold *et al.*, 2010, indicate that roughly 5000 canoes operate in Western Region). The fish marketing system involves a chain of activities including: purchase of inputs (canoes, mechanized wooden boats, nets, corks, weights, hook and lines); casting and dragging of nets; and on-board preservation using ice blocks. Boat owners employ a number of fishers for fishing activities. The size of the crew ranges between 2 and 30 depending on the size of the canoe. The smaller paddle canoes, usually c. 1 metre width, employ about 2 to 4 crew members, while the medium and larger ones, with dimensions of c. 2 and 3 metres respectively, have crew members ranging from 20 to 30. These types of canoes are powered by outboard motors - with the most common being 40HP. Crew members are paid after every trip once operational costs are deducted from the proceeds, with larger shares going to the owner of the boat (/nets) and c. 50% of the profit shared among other crew members.

Ghana experiences upwellings each year. These are seasonal phenomena that bring cool, nutrient rich water to the surface, resulting in high productivity, and sustaining a biomass of organisms not seen in other areas of the ocean. The largest upwelling (major) occurs from June to September whilst the smaller one (minor) is between February and March. These upwellings bring a significant increase in fish catches (*bumper* seasons), particularly of small pelagic species such as sardinella. The rest of the year is associated with little or no catches (*lean* season) in the pelagic fishery. The use of lights (increasingly used by canoe fishers since 2003, but declared illegal in 2010) has to some extent taken the seasonality out of fishing – with lights attracting fish (even juveniles) and fishers able to maintain a reasonable catch year-round. However, if the new regulations are enforced, the marked seasonality will return to fishing.

Fishers typically fish on a daily basis and most observe a “day of rest” once a week (Tuesdays in most places), especially in small fishing communities. A typical fishing trip can last up to 20 hours with the exception of hook-and-line fishers and those utilising drift gill nets, who go on 3-4 day trips and carry ice to preserve catches. During the lean season some fishermen do not go fishing at all, because the small catches do not cover their costs.

The most common fish caught is sardinella (flat and round sardinella), locally known as “éban”. Other fish include tuna, red fish, sea bream, cassava fish and less frequently swordfish and marlin.

During the major season, fishermen report that 10-30% of their catch has to be down-graded, as a result of poor on-board icing and handling. Such fish are used to make “stinky fish” (locally known as “momone”). Momone is, in essence, fermented fish and is prepared by airing it until it begins to rot. It is then placed in a mixture of salt and water and allowed to settle for a few days after which it is left in the sun to dry. Though none of the “spoilt” fish is discarded, it fetches around half the price of fish which is in good condition.

The chain begins with the supply of inputs to fishermen: canoes, nets, cork, weights, fuel, and outboard motors. Lower cost, frequently used items can be purchased at the large landings from small businesses but large items (such as new outboard engines) are purchased further away (e.g., in Takoradi). Locally available goods and services include motor repairs, fishing gear and fuel (either the subsidised “pre-mix” or other fuel if pre-mix is not available). Dug-out tree trunks are used to make canoes and although the use of the preferred wood (wawa) is officially illegal (to protect the dwindling numbers of this tree), it seems this trade still occurs¹³. Certainly in interviews, no-one has mentioned what type of wood could be used in its place. The dug-out is then built-up using planks, to give the canoes height and stability.

3.3 Fish traders

The fish traders (also known as fish mothers or “konkofo”) pre-finance fishing trips and purchase fish from fishermen for distribution to other actors in the fish value chain, most of whom are smoked fish processors. They also sell directly to fresh fish retailers, “momone” processors, and individual consumers.

¹³ Building of new canoes takes place quite openly in the fishing communities. One fisherman indicated that the wawa trees can be bought in the north-eastern part of Western Region – and also from Cote d’Ivoire. They are transported in covered trucks to avoid detection.

Particularly in smaller landing sites, the Queen Mother (“konkohene” – the fish mothers’ leader) negotiates a price with the first boat that arrives and this price is generally valid for the rest of the day. In larger landing sites like Sekondi harbour, this role has allegedly lost its importance and prices are negotiated on a boat-by-boat basis¹⁴. The konkohene is appointed by the fish mothers. She remains in power indefinitely or until her elders (also fish mothers) advise her to step down.

Exchanges between fish mothers and processors/consumers are typically carried out at the landing site where the fish is purchased (although, as noted above, fish mothers sometimes travel to the large landing sites to buy fish). Apart from acting as intermediaries at the various fishing harbours, fish mothers can also play important roles in informal finance. They almost always pre-finance the fishing trips with fuel, gas oil, kerosene, and food, thus securing access to that boat’s catch. Depending on the financial position of the fish mothers and fishermen’s need for credit, one fish mother can support more than one fisherman. It is rare for fish mothers not to pre-finance fishers. If this is the case, then it most probably means that the fish mother is the wife or close relative of the boat owner and already has access to an adequate supply of fish.

Their support is not only restricted to fishers since, in some cases, they support processors by selling to them on credit. This will however depend on the specific relationship between the processor and the fish mother. Transactions at the harbours are mainly based on informal agreements and mutual trust. It is this ability to command significant funds that gives fish mothers unique access to fish catches and why they are able to collectively influence fish prices.

¹⁴ There seem to be a number of reasons for this including the presence of very powerful fish traders (working alone) and semi-industrial vessels that may have other sources of finance. It was also stated that in places where landing fees are charged (such as happens in smaller landings with improved facilities – a jetty, a covered area for fish washing and gear etc.) then the traditional role of the fish mothers tends to break down. Nevertheless, whether acting as a group or individually, if they pre-finance fishing trips then this will assure a very strong role in purchase and price-setting.

The fish mothers essentially act as a monopsonistic (one buyer) cartel: they control access to supply through pre-financing and (since relatively few people have the resources to offer such credit) they limit “membership” of the group by the same mechanism¹⁵.

3.4 Fish processors

Processing of fish, which represents an important sector for women, seems to be concentrated at the small- and medium-scale levels. Fish is processed using several methods of which smoking is the dominant. Most of the processing takes place at the individual or household level and the most common species of fish processed is sardinella, known locally as “ēban” (also known as “Amane” in some areas), though it is common to see other types of smoked fish. Processors mostly purchase fish from the fish traders, but there are cases where they purchase directly from fishermen. If there is insufficient supply of fish, processors travel to other landings to purchase fish. Processing technology is mainly traditional using manual labour. Smokers use so-called Chorkor kilns and utilise various inputs such as baskets, basins, grills, basket nets, fuel wood, and brown paper.

3.5 Marketing of smoked fish

Selling fish in Ghanaian markets

Most processors do not wait for traders to come to them - they actively seek market opportunities by transporting smoked fish to various large markets within and outside their district or region of origin. In these markets, processors are excluded from selling directly to consumers. They sell

¹⁵ Fish mothers indicated that a new entrant does not necessarily need permission but it would be in her own interest to contact any fish mother willing to assist her. She can then understudy her for some time before operating on her own. It is not compulsory for a new person to join the fish mothers’ association but the way in which the group set prices acts in their favour. If she does not join, she risks operating at lower margins or even making a loss. According to the fish mothers, they are very united - they share information and agree on selling prices of fish after the konkohene has negotiated the purchasing price on their behalf.

fish in packs of hundred to retailers who in turn retail to consumers in the same markets or smaller neighbouring markets.

In some cases women who act as itinerant traders go to processors in their communities to buy the fish, which they sell to retailers in central markets. Retailers sell smoked fish to consumers (individuals and food vendors) at the same (central) markets or in smaller, surrounding markets whilst others transport it to villages for retailing. While the majority of these traders deal solely in smoked sardinella, a few sell other types of smoked fish as well.

Though they operate as individuals, most retailers are members of trader associations. Almost all markets visited had an association for smoked fish sellers in general and, in some cases, specifically for sellers of smoked sardinella. Members of these associations help each other in times of need and also share information on prices and supplies. They are typically headed by so-called “commodity queens”. The queen’s main functions include the establishment of informal market rules as well as the settling of disputes between retailers. One common rule, for example, makes it mandatory for every person selling fish in a particular market to give a specific quantity to the queen or pay the equivalent amount in cash. Failure to do so would warrant a fine or expulsion from the market. The commodity queens are appointed by an overall market queen whose role is inherited.

In the lean season, when fish is scarce, those retailers that are able to afford it resort to purchasing frozen fish from local cold stores and smoke it themselves.

Fish bound for regional markets

Whilst most fish sold is for domestic consumption, some of it ends up crossing international borders. Processors from Shama, Cape Coast (Duakoro) and Elmina (Bantuma) sell their produce in Denu, a market on the Ghana-Togo border. The fish here is sold to retailers coming from Togo, Nigeria, and Benin. It has a better quality appearance than the fish sold domestically. Processors smoke it using a mix of firewood and coconut shells before further smoking it at low temperatures with sugarcane bagasse (remnants of sugarcane after it has been crushed to extract

the juice). This gives it a shiny appearance. This higher quality is reflected in the price fetched by the processors which, on average, is 25% higher¹⁶ than smoked fish sold in other markets.

These processors are few in number and can be found in small villages in Central Region and in Shama (Western Region). The latter number around 25 in total. It is clear by simply visiting a household of one of these processors that they have made significantly higher investments than other processors. They have large smoking facilities and are able to smoke large amounts of fish (up to 100 pans a day during the bumper season)¹⁷. Not all of it is sold immediately – they are able to store large quantities which they sell at a later date (fish that has been well-smoked and stored has a shelf-life of five months or more). One smoker from Bantuma explained how she was, at the time of the interview, selling fish which was smoked during the bumper season. This, she explained, allowed her to generate income even when fish catches were low.

It is interesting to note that processors in each of the three communities visited collaborate with each other and pool resources in order to transport and sell their fish in Denu market. Trucks are loaded with baskets of fish from various processors and only a few of them actually travel to Denu. There, they sell their own fish and others' fish. This collaboration works in other ways too. Processors from Duakoro and Bantuma have a mutual agreement whereby they travel to Denu on alternate market days (periodic markets which fall on every fourth day) so as not to flood the market with too much smoked fish – which would reduce prices and, in turn, profits.

As in other markets, local informal cartels dominate the market transactions. Thus, processors are not permitted to sell directly to the retailers crossing the border to buy Ghanaian fish. Instead

¹⁶ The average price per basin of smoked Eban during the March 2011 lean season was GHc360 in Denu, compared to GHc270 in other markets.

¹⁷ Basins (or pans) are widely used to transport fish. With wet fish (live weight), a single basin weighs about 30 kgs. With smoked sardinella, usually packed to hold 500-600 pieces each of roughly 25 g, then the basin weighs about 13 kgs. For transportation, smoked fish is placed in wicker baskets, which are in turn bundled into packs of 2. A single basin of smoked fish is equivalent to 3 packs (or 6 baskets).

they must sell through local market women who act as intermediaries. Language works in favour of this arrangement too – since Ewe is spoken on both sides of the border (but not typically in Western or Central Region) and some of the Ghanaian border traders also speak French. These market women get a commission of around GHc2.00 per pack sold (or GHc 6.00 per basin).

During the high season, smoked marine fish also passes through Tamale – serving both domestic markets and Burkina Faso. It is very rare for processors to travel there to sell their fish but some retailers travel to Takoradi and Kumasi to source smoked fish.

3.6 Horizontal linkages and the enabling environment

State intervention via policy, regulation or enforcement of regulations has to date been relatively “light” with respect to the domestic fisheries sub-sector (the artisanal fleet and traditional processing and marketing). It appears that with the new fishing regulations in 2010, there may be stricter enforcement of fishing regulations but the marketing component of the fisheries value chain in practice still falls largely outside the ambit of government involvement.

However, there are a number of organisations and institutions (governmental and non-governmental) that contribute to the conditions and context in which the fish value chain operates. These are not directly involved in the creation of the final output but their activities affect the performance of the value chain. The new fisheries regulations are one such example. There is also the Ghana Ports and Harbours Authority (GHAPOHA) which serves to facilitate fishing activities at the larger fishing harbours (e.g., it has an ice plant at Sekondi harbour).

Traditional institutions are very important, however. Most notable amongst fishing communities are traditional chief systems. Chief fishermen, together with their aides, govern fishers in their respective communities. They typically enforce traditional rules (such as no fishing on Tuesdays) and resolve disputes between fishers. The same also applies for fish retailers and fish mothers, who have a queen who controls access to markets, sets prices, and resolves disputes.

NGOs and donor projects have influence in fisheries – relating to specific areas or topics. In Western Region, most of the organisations that operate in the coastal zone are in fact informally linked to ICFG, particularly via the network organisations of its partner, Friends of the Nation.

Banks and non-banking financial institutions also give various forms of support to actors at the different segments of the fish value chain. The Agricultural Development Bank supports fishermen with in-kind credit of outboard motors, usually at prices below the prevailing market rates. Non-banking financial institutions like the Sinapi Aba Trust (SAT) and Christian Relief Aid Network (CRAN), in Takoradi and Elmina respectively, assist some processors with credit using the group collateral system. SAT provides credit for processing activities and encourages clients to save money by opening a compulsory savings account for them. SAT also pre-finances children's school fees and sponsors those eager to learn a trade or skill. See Box 1.

At the marketing or retailing segment of the chain, there exist private savings operators, locally known as 'susu' collectors, who keep daily savings for retailers for a fee. At the end of every month, the lump sum is collected from them and deposited into the retailers' accounts held with commercial banks (Barclays Bank or the Opportunity International Bank, the two most common banks mentioned by traders).

As highlighted above, fish mothers also offer credit to fishermen and sometimes processors too.

Box 1: Sinapi Aba Trust – a micro-finance institution

Sinapi Aba Trust (SAT), a micro-finance institution, works with small-scale entrepreneurs and provides them with financial assistance to run their operations.

First-time borrowers typically apply for credit as part of a group (group collateral) and are given small loans of up to 500Ghc. During field work in March 2011, the annual interest rate for such loans was 39% (this is considered an average rate in Ghana and inflation in mid-2011 was almost 9%). However, unlike commercial banks, SAT places 50% of the interest repayments in a borrower's savings account, which s/he then receives on paying off the loan. In this way, they not only benefit from the initial credit that they received but also from the extra savings which are accrued throughout the repayment period.

Once a loan is approved, borrowers have 3 weeks grace before they must begin the repayments (made on a weekly, bi-weekly, or monthly basis but the full amount must be repaid within four months).

The group collateral system ensures that repayments are made – if one individual in the group cannot afford a payment, then the rest of the group must compensate. If this happens, the “credit rating” of every member of the group will not be affected. SAT monitors each member individually and can even decide to provide credit to them on an individual basis if it is satisfied with their performance.

Many fish processors interviewed take advantage of such products (from SAT and other financial institutions) and mainly use the money to buy fish to smoke. There is room for improvement, however. Processors often complain about the untimely disbursement of funds – the ideal time to receive credit is during the bumper season when they can buy more fish than during the lean season.

IV. GOVERNANCE AND POWER RELATIONS IN THE VALUE CHAIN

4.1 Why look at power relations?

Value chains are usually characterised by repetitive interactions and certain amount of “organisation” linked to this. This in turn reflects the power relations or governance of the chain. The power which any group of actors may have in the chain may paradoxically be reflected in two seemingly contradictory attributes. It may (i) force other parties to take particular actions or may (ii) reflect the capacity to be deaf to the demands of others. Power relations in the value chain therefore describe actors who not only determine their own actions but may powerfully influence the ability of other actors to act, setting parameters to which others conform.

4.2. Assessing power relations in the value chain

Applying the indicators proposed by Kaplinsky and Morris (2000) in determining dominant governors in a value chain, the governance issues in the fish value chain were assessed in a scoring exercise. These indicators include (i) bargaining power, (ii) protection from competition, (iii) information concentration, and (iv) the share of profit accruing to various actors. Respondents were asked to score their perceived position in terms of the “importance” and “influence” they exert for each of the indicators. Importance is assessed as an actor’s ability to have great effect and influence in the chain, while influence means the power to have an effect or exert control on other actors or situations along the chain. Research findings with regards to the various indicators are as follows (see Table 5):

- *Bargaining Power:* During the bumper season, retailers of smoked fish are perceived as the most powerful group of actors in terms of bargaining power, followed by processors. Fish mothers and fishermen are the next in order of power. However during the minor season when there is scarcity of fish, the power is perceived to change hands. Fishermen are perceived to be more powerful followed by fish mothers, processors and retailers.

- *Protection from Competition:* Retailers are perceived as being highly capable of protecting themselves from competition compared to other chain actors. These are followed by fish mothers, then processors, and finally, fishermen.
- *Information Concentration:* Again retailers are regarded as the most powerful actors when it comes to actors' ability to control flow of information along the chain, second to them are the fish mothers, followed by processors and subsequently, fishermen. Retailers are well organised compared to other actors. This facilitates the flow of information amongst them which in turn improves their negotiation position compared to other actors.
- *Share of Profit:* Fish mothers are perceived to make most of the profit generated along the chain, followed by retailers, processors and fishermen respectively (suggesting that despite perceptions of power shifts in the lean season, fishermen are not able to translate that into a larger share of the profit).

Table 5: Power relations in the fish value chain (1, highest share; 2, lowest share)

	Bumper Season				Lean Season			
	1	2	3	4	1	2	3	4
Bargaining Power	Retailers	Processors	Fish Mothers	Fishers	Fishers	Fish Mothers	Processors	Retailers
Protection from competition	Retailers	Fish Mothers	Processors	Fishers	Retailers	Fish Mothers	Processors	Fishers
Info Concentration	Retailers	Fish Mothers	Processors	Fishers	Retailers	Fish Mothers	Processors	Fishers
Share of profits	Fish Mothers	Retailers	Processors	Fishers	Fish Mothers	Retailers	Processors	Fishers

One factor attributing to the position of fish mothers and retailers in the chain is their much higher degree of organization compared to that of fishermen and processors. They form very effective and functional groups and associations where they control flow of information across the chain. The study revealed that the majority of retailers belong to an association. This enables

them to share information on prices and other business practices, thereby improving their negotiation position vis-a-vis the fishermen and processors.

Their ability to organise themselves seems inversely proportional to their numbers. Since fish mothers and retailers are relatively smaller in number, they are more able to come together and share information. In the case of fish mothers, this seems to be due to the fact that they are able to command the funds necessary to pre-finance fishing activities. The study reveals that nearly all fish mothers finance fishing trips and when this is not the case, which is apparently rare, it implies that they have family ties with the owner of a boat (wife, for instance) thus having secure access to fish without the need to pre-finance. Processors are often unable to invest in fishing activities, especially since they have high operational costs, which explains why they are not usually able to buy directly from fishers. There are exceptions of course. Aunty Mary, a processor in Sekondi harbour, pre-finances a number of boats. She is thus able to buy directly from fishers without having to transact via the fish mothers.

Fish mothers' pre-financing and their cartel-like operation explains why fishers have such a small share of power. They are obliged to sell their catch to these fish mothers at often unfavourable prices. It can also be attributed to the perishable nature of fish which means that it must be sold immediately after landing. Fishers must accept any price if they do not want to end up with rotten fish which fetches even lower prices. It is not surprising, therefore, that fishers have more control over the price of fish during the lean season when the demand exceeds supply.

Furthermore, since the fishers are so many in number, it is difficult for them to organise themselves to command a better share of bargaining power. Whilst they do communicate between themselves at landing sites and through mobile phones, it is more to discuss where best to fish rather than what prices to expect. There are, however, instances where they do form associations in an attempt to get better prices. In Aboase, a small fishing community in the Shama district, fishermen are organised (as a result of training provided by a project) and set prices themselves. This is done by the chief fisherman and seven senior fishers. Though it gives them more control over the prices and stronger bargaining power, the case in Aboase is more of an exception than the rule.

Similar to fish mothers, market retailers are highly organised and are able to control market access and prices, via the traditional hereditary market queen system. The market queen appoints so-called “commodity queens” who govern retailers of a particular commodity. Anyone wishing to sell to consumers must first approach the commodity queen for permission. In this way access is highly controlled. Processors are not allowed to sell directly to consumers and are limited to selling only to retailers. Even before they are able to do so, they must, in most cases, obtain permission from the market queen or a member of one of the market associations.

In Kumasi Central market, a fish processor selling fish in packs of hundred explained that she only sells to retailers since she is not allowed to sell directly to consumers. As though to prove her point, she pointed towards a retailer who had set up her stall just next to hers. The processor would sell to the retailer who would, in turn, sell to consumers – all in a physical space of around 3 square meters!

Fishers and processors, on the other hand, have no such restrictions when it comes to fishing and smoking fish. Provided that they have the necessary resources to do so, they are able to enter the market freely.

V. CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS

5.1 Recap of key points

An important source of livelihood

Fishing, fish smoking and fish trade are important sources of livelihood in coastal communities in Western Region. Visits to the landing sites and numerous sources indicate that almost all marine fish is smoked¹⁸. Whilst fishing is a source of livelihood for men, women dominate fish trade and fish processing. In addition, these activities support numerous adjunct livelihoods in fishing communities, whilst also representing the main driver of the local economy, thereby supporting the provision of other unrelated goods and services.

Strong local markets

Smoked fish from Western region is mainly destined for important markets in Accra and Kumasi, whilst small quantities end up in other diverse markets, including neighbouring countries (particularly Togo with onward shipment to Nigeria, marketed through the market on the border with Togo). Fish is widely consumed in Ghana and locally sourced smoked fish finds a ready market. With increasing pressure on capture fish resources and population growth, apparent per capita consumption levels have been somewhat erratic over the last twenty years but mostly above 20 kg/capita/year. Consumption levels have been maintained through growing dependence on imports¹⁹. Imports of low value frozen fish are also smoked, to supplement the supply of the Ghana-sourced product.

Seasonality

There is marked seasonality in the marine fishery²⁰ - associated with differences in the amount of fish landed, its price, the adequacy of the processing capacity and hence deterioration in its quality. Seasonality also affects the balance of power in the market system: in the peak season, it is a buyer's market with the fishermen having less influence over prices, whilst in the low season, the fishermen have a stronger bargaining position.

¹⁸ Braimah (2008, draft) indicates 78% of the marine canoe catch is smoked.

¹⁹ Aquaculture has been growing in importance too, but in aggregate terms still remains minor at the present time.

²⁰ The increasing use of light-fishing tended to make this less apparent in the landings data, but with the introduction of new fisheries regulations and expected stricter enforcement, sharper seasonal differences are likely to re-emerge.

Down-grading of fish to less remunerative uses

Post-harvest losses of fresh fish are manifested in down-grading of fish to less remunerative uses. This is most apparent during the peak season. Thus fish that is not fit for smoking is re-graded and used to make a popular fermented fish product (*momone*). Fish that is completely unfit for human consumption is traded for use as fishmeal²¹. Processed fish may also suffer losses due to insect infestation but most stakeholders interviewed put greater emphasis on fresh fish “losses”.

Premium smoked fish products

At the other extreme, there appears to be a very limited market for a premium smoked fish product. Smoked fish for export to regional countries to the east is prepared and presented in a visually more attractive way and commands a higher price. However, the regional market for this product seems to be limited because the processors co-ordinate to sell on alternate market days, or risk flooding the market. The number of people engaged in this type of processing is small and limited to very few processing villages (only one in Western Region, to the authors’ knowledge). Even in Accra, the authors were not able to identify any premium smoked product on sale in local supermarkets and everyone interviewed indicated that most consumers rely on the traditional product available in local markets.

Informal trading cartels

The main vertically linked actors are: fishermen, fish traders (at the landing), fish processors and market retailers. Both sets of traders (at the beach and in the retail markets) are well-organised, effectively operating informal cartels whose membership is limited by traditional rules and, in the case of the traders at the landings, by their ability to extend credit to fishermen thus securing access to the catch. Good access to information on prices also contributes to their strength.

²¹ Braimah (2008, draft) estimates that 27% of the marine canoe catch is used for fishmeal.

Improved landings and infrastructure – effects on fish transactions

The traditional roles of the fish mothers seem to break-down in Sekondi harbour – apparently because some of the fish on sale from the semi-industrial vessels there has not benefited from trader credit and also because at least one trader (also a woman) operates there on a very significant scale, without any co-ordination with the other women traders.

At other landings with improved facilities and where a landing fee is charged, it is alleged that the role of the women traders is weak – though the authors witnessed less evidence of this.

A snapshot in time

These findings are based on field work mostly conducted during a two-week period in the slack season (in March 2011) as well as other sources (cited in the text), including work by WorldFish in 2010. During the fieldwork, respondents were able to recount peak season activity and other sources have been used to corroborate those findings. Nonetheless, this initial study represents a snap-shot of activity during the fishing year and for some activities direct observation was not possible (e.g., trade from Western Region to Tamale and onward destinations could not be observed because these are peak season transactions). Whilst additional work is unlikely to change the broad conclusions drawn above, additional investigation during the peak season will undoubtedly provide more detail on some of the issues raised here.

5.2 Discussion of key issues

Focusing on options to deliver livelihood improvements at scale, for the poor

The Western Region coastal zone is populous and many fishing communities are very poor. With growing pressure on fish resources and renewed attempts to improve marine fisheries management, there is increasing focus on livelihood diversification in coastal communities, including options to make improved use of the fish catch. This study deliberately focused on an important existing activity on which many people depend – because carefully identified improvements in such value chains are likely to offer the strongest potential to deliver livelihood gains, at scale, for the poor, particularly given strong growth in domestic markets.

Informal cartels – credit, information, organisation

The current trading system is complex in its inter-relatedness and any attempt at “tampering” with that system risks jeopardising some of its advantages (namely an important source of credit for fishers and a market system that is largely successful in “clearing” the market at the point where the product is most perishable, i.e., when the fish is fresh).

The women traders (at the beach and in the retail markets) appear to act in ways that are “anti-competitive”. At the beach, by working together (and by advancing critically important credit) they represent a monopsony (single buyer) with strong influence over prices paid to fishermen (particularly as the fresh fish is highly perishable and the fishermen are not well-organised). In the absence of such co-ordinated behaviour by the traders, the fishermen might perhaps be able to secure higher prices for their products. That in turn would encourage them to supply more fish (assuming they had a means of pre-financing their fishing trips), theoretically filtering through into a situation where eventually more fish is available on the market at lower prices (though there are ecological constraints to this outcome)²². The beach traders exert less influence over the selling price to the processors – because of the need to sell the fish quickly (before it perishes), because they only rarely extend credit to processors and because processors will buy at other landings if there is too little fish available locally (or if it is too expensive).

In the retail markets, the main reason to organise is to limit the number of retailers (and thus, by limiting competition, protect the retailer margin). Both the processors selling to the retailers and the consumers buying from them have other traders (including those in other markets) with whom they can transact and, since the processed fish is not perishable, they can wait until the price is sufficiently attractive. For their part, retailers must realise sales without too much delay in order to recoup their purchase costs. So whilst co-ordination among retailers affects retail prices and prices paid to processors, this influence appears to be less strong than that of the fish mothers buying fresh fish at the beach.

These organised traders command their roles in the marketing chain by virtue of (to varying degrees):

²² This rather simplistic scenario ignores the ecological dynamics of the fishery and the tendency for over-fishing which, in the absence of effective management measures, will ultimately reduce the amount fish landed.

- access to finance and hence their ability to buy in bulk and/or to extend credit
- access to information on prices in other locations and at different points in the value chain, and
- their capacity to organise, which is in turn facilitated partly by traditional institutions in marketing (and other areas of economic activity) in Ghana.

The value chain might be more competitive if fishers and fish processors also had access to other sources of finance for fishing trips²³ and price information and had stronger capacities to organise. However, this outcome is not a given because: (a) upward pressure on fresh fish prices could reinforce the tendency to over-fish and result in a decline in supply; and (b) situations in which there are too many operators willing to trade at very low margins, are not necessarily in the best interests of the sector in the medium-term, since this will tend to erode a “normal margin” such that operators may not accrue sufficient reserves to adequately manage risks whose timing may be unpredictable (e.g., a period of unexpectedly low landings, or bumper landings giving rise to a glut and difficulties selling fish).

Seasonality and down-grading of fish

Seasonality in fishing was seen as an issue by many stakeholders – manifesting in discussion of scope for (a) alternative processing options to cope with large catches and reduce down-grading of fish, and (b) credit so that beach traders and processors could afford to buy the larger volumes of fish at seasonally low prices. Unfortunately there are no easy answers to this: small pelagic fisheries tend to be subject to peak season gluts, with small fish size, their oily nature and generally low value compounding the tendency for rapid deterioration in quality. Whilst there may be financially viable technical options for improved handling (e.g., more use of ice and ice boxes for higher value fish), there are no current options suitable for economically handling occasional very large volumes of low value fish. Seasonal canning operations are uneconomic and although the issue still continues to attract attention²⁴, it seems that no technical solution is

²³ With the exception of a few government schemes, such as the in-kind credit of outboard motors delivered through the Agricultural Development Bank, formal sources of credit are not available to fishermen. Financial institutions tend to see fishers as engaged in a high risk activity and lacking adequate collateral. It is the provision of credit for day-to-day activities (particularly for fuel purchases) that is in especially short supply.

²⁴ e.g., Young, Goulding and Stirrat, 2010.

readily available. This explains why globally small pelagics are the main source of fish used in fishmeal.

Injections of credit might allow more of the catch to be purchased at the beach – though it is not clear that there would be sufficient processing (smoking) capacity. Most processors do, however, view inadequate credit as an impediment to their work. Those few with access to formal sources of credit tend to complain about the timeliness of disbursement and the small size of loans during the peak season. Unlike fishermen and processors, the majority of retailers and fish mothers did not report lack of credit as a constraint. It seems that financial institutions are more willing to provide traders with loans – which can be attributed in part to their ability to organise and demonstrate a strong cash flow over the year. The retailers, moreover, are handling a less perishable product.

Another possible way to reduce losses would be to improve access to price information – perhaps even permitting fishers to choose to land their catch at alternative locations. How this could work in practice in Ghana is not clear, however, because credit links and traditional rules tend to dictate where a particular fisherman can land his catch (although occasional exceptions are made in an emergency).

Marked seasonality in the fishery also underlines the importance of livelihood diversification – as a source of off-season income and to help diversify the fishing-dependent coastal economy.

On-board handling

Access to ice tends to have an immediate effect on fishing and trading activity. Thus, e.g., when a truck started bringing ice to Dixcove in 2008, fishers immediately responded by building ice boxes and extending their trip length and more traders started operating there. The availability and affordability of ice is likely to improve as incomes increase and electricity supplies become more reliable. In addition, there are planned World Bank and AECID investments in improved infrastructure at fish landings. Improved access to ice is likely to reduce the amount of fish that is down-graded to lower value use, but unlikely to make a significant difference during periods of seasonal glut catches of small pelagics (see above).

Limited markets for a premium smoked fish product

As noted above, there seem to be quite limited channels at present for a higher value (but nonetheless “traditional”) smoked fish product – be it in the national, regional or extra-regional markets. A focus on products for such markets may present an opportunity for some groups, but is unlikely to deliver livelihood improvements at significant scale. Extra-regional markets are, moreover, likely to present additional barriers to entry that again will tend to limit the participation of large numbers of processors or traders. Pursuit of such opportunities does not appear to present an appropriate focus for public or not-for-profit initiatives at the present time.

Value chain improvements and pressure on fishing resources

In general, improvements in the value chain that improve competition and incentives for value chain actors will tend to encourage more investment - ultimately increasing the flow of product through that chain. In Ghana’s case, given current pressure on fish resources, there are presently a number of different but linked initiatives to improve fisheries management (e.g., new fishing regulations, a new World Bank / Government of Ghana fisheries project, as well as the ICFG initiative which is developing and piloting different approaches to fisheries management). This is important context because in its absence, value chain improvements would tend to increase pressure on fishing resources.

5.3 Recommendations

The best scope for pro-livelihood development of the smoked fish value chain appears to rest with initiatives relating to: credit, price information, post-harvest losses and organisational development. It is recommended that these are explored via carefully designed pilots, possibly focusing on more than one topic within a single pilot – working through existing service

providers wherever possible²⁵. These are not without risks, however, so the pilots should be developed in close discussion with stakeholders and their implementation closely monitored.

Credit

The operational (day-to-day) credit extended by the women traders at the landing sites to fishermen is an extremely important input for which there seems to be no scalable alternative source at present. That credit gives the women traders considerable power over prices paid to fishers. The women traders would like to have access to more funds, in order to buy more fish when prices are very low (when there are bumper season catches).

But fishers and fish processors would also like to have access to credit and, in a sense, both groups would like this to limit the power of the women traders at the beach. (The processors might be able to buy directly from the fishers, whilst the fishers would be less dependent on the fish traders at the beach, so could sell their fish to the highest bidder – possibly direct to processors). However, there are two key risks with a credit intervention that targets fishermen and processors: (a) can they repay? and (b) what will be the effect of the women traders at the beach? (Note that retailers do not request credit; retailers interviewed by the team indicated that they save a lot and have no need for credit).

The objective of a credit intervention would be to (a) adjust the balance of power in the chain, to some extent and (b) reduce losses (or down-grading of fresh fish). Such an intervention would not seek to displace the role of the women traders, because their role is useful and it is extremely unlikely that it would be possible to develop an alternative of sufficient scale. However, carefully designed injections of credit might help shift the balance of power, at the margins, in the value chain and would strengthen livelihood benefits, if successful in reducing losses. Credit targeted to processors or fishermen would need to be accompanied by organisational development inputs, to promote repayment. (It would be very useful to closely review the Aboase experience, where fishers have organised, to understand better what has made that possible).

²⁵ Earlier in the life of the ICFG initiative it had been suggested that ICFG and ACDI-VOCA ADVANCE project might work together on any value chain interventions in Western Region. However, during meetings in Accra in March 2011, ACDI-VOCA indicated that plans to open an office in Takoradi have not yet been confirmed and that their activities in the northern part of Western Region could be covered from their Brong Ahafo office.

Any credit intervention should:

- be carefully designed in close consultation with key stakeholders
- have very clear objectives
- be limited in geography and scope
- be implemented via an existing provider of credit services and
- be monitored very closely (including the effect on the fish mothers).

Price information

Like credit, price information also seems to play a role in the power balance between fishers and fish traders at the landings and in “market clearing” (i.e., evening out supply and demand – such losses are minimised). Yet it is difficult to see how to develop a price information initiative that would result in any significant and positive change, because credit ties to the fish traders as well as local traditions dictate that the fishers land their catch (except in cases of *force majeure*) at their home base. Whilst similar pressures limit the mobility of the fish traders, there is probably more scope for them to shift between landings (particularly if they have close assistants, so that they can effectively be in two places at once).

It is suggested that this be explored in more detail with fishers, traders and processors, to understand better whether there is scope to improve price information, to whom and with what objective – and how this might work in practice. A key objective would be to reduce fish “down-grading” so beach prices would be the main focus²⁶. It might be possible to explore scope for fishers to land fish at one of a few nearby landings (perhaps landing sites linked via ICFG initiatives in other areas) – or to explore whether more localised mobility among the traders would be desirable or beneficial. It is also important to keep in mind the changes taking place at some of the improved landings: are more traders and fishers focusing on these landings? Is there a growing concentration of facilities and services at these landings.

²⁶ There does not seem to be any pressing need to develop a price information initiative at other points in the value chain, since there is no indication that the chain functions inefficiently as a result of poor information on prices.

Again, were a pilot initiative on this developed, it should be carefully monitored – to determine its effect on all key stakeholders and on fish losses or down-grading.

Losses in value of fresh fish

As indicated above, the most significant losses relate to the downgrading of fresh fish, when there are bumper catches. This is a problem with small pelagic fisheries everywhere and explains why small pelagics are globally the main fish used in fishmeal.

However, there may be scope to reduce some of the losses with greater use of ice (and wider more affordable availability of ice). It is suggested that ICFG partner with the Fisheries Commission in implementing the World Bank and AECID infrastructure investments, to (a) improve the participatory element in the design specifics on their implementation; (b) closely monitor and evaluate their effects, introducing timely modifications where needed; and (c) identify lessons for wider area and investments.

Organisational development

Piloting approaches to organisational development could serve a number of purposes. The proposed approach would be to: explore interest and needs relating to organisational development among (a) fishers and (b) fish processors, possibly linked to credit or price information interventions (above) and/or to other non-marketing roles (e.g., fisheries management); review Aboase experience with fishers' organisation (what conditions made that possible? What effect has it had?); implement a pilot (making sure to avail of suitable expertise on organisational development and not under-estimating the scale of that task). The intent here would be improve their bargaining position and improve access to credit and market information. Where possible work with (/through) other organisations experienced in organisational development focused on market access issues.

5.4 Next steps

Further development of pilots will take place in Years 2 and 3 of the ICFG initiative, in close discussion with the ICFG team and other partners.

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Annex A: Terms of reference for Western Region fisheries value chain study

Objective

The underlying objective of the fisheries value chain analysis is to identify opportunities for growth in the fisheries value chain, with an emphasis on those opportunities that have the potential to generate significant additional livelihoods, particularly at the level of the fishing communities and for low-income groups. The results from the value chain analysis will be used to identify pilot interventions to promote those livelihood outcomes.

The main focus for the study is smoked fish (major species/product forms) destined for domestic markets. However, work will also be undertaken on the fresh fish trade and frozen fish to find out more about the significance of these value chains.

Terms of reference

1. Identify and describe the products and any distinct sub-groups that constitute the main focus for this study (smoked marine fish and fresh and/or frozen fish); where possible, provide an estimate of applicable product volumes (e.g., by landing or main market or for Western Region);
2. Map the chains and in so doing, identify the various actors, their functions and existing linkages in these fisheries value chains; identify and as far as possible describe any significant chains that lead into regional markets (without following the chains outside Ghana);
3. Make a preliminary analysis of the input-output structure and the distribution of margins and return on investment along the chain;
4. Make a preliminary assessment of the power relations in the value chain and how these affect the distribution of margins along the chain;
5. Identify significant trends and changes influencing the fisheries value chains
6. From the perspective of fish value chain livelihoods, analyse the constraints and opportunities in the value chain (from the point of initial sale at the landing);
7. Make recommendations on pilot interventions and partnerships with the potential to significantly expand livelihood opportunities in the value chains;
8. Where apparent during the course of field work, note and describe any significant planned or mooted investments targeting the fishing economy in Western Region (e.g., new port or post-harvest infrastructure); where possible/apparent, make a preliminary identification of key levers and/or approaches that would improve the poverty impacts of such investments

Approach and provisional field schedule

The WorldFish team will be led by Ann Gordon (economist) with support from Alan Pulis (WorldFish field scientist) and Ellen Owusu-Adjei (agricultural economist).

The team will employ a mixture of methods including: review of available secondary information; direct observation, semi-structured interviews with key informants and focus group discussions; and site visits throughout the value chains (e.g., landing sites, intermediate markets, processing sites and final markets)

The provisional schedule is as follows:

15th March: AP and EO meet in Accra; travel to Sekondi; meet with ICFG team leader 15th March late afternoon (or later in the programme, subject to his availability)

16th – 19th March: field work at Sekondi harbour, Agona market and one other landing site (probably Axim or Dixcove)

19th March: AG arrives Accra and travels to Sekondi

20th March: AG, EO and AP meet to review initial work

21st-25th March: EO and AP continue field work, progressing “further up” the value chain (e.g., subsequent processing sites and markets); periodic review by telephone with AG

26th March: AG, EO and AP meet to review results and plan final stages of work.

28th-31st March: AG, EO and AP continue work in destination markets

1st April: Debrief with ICFG team leader.

Annex B: Value chain analysis – field team itinerary		
Date	Location	Region
16 th March 2011	Sekondi Harbour	Western
17 th March	European Town – Sekondi Enyasi – landing site Shama – landing site Aboase – landing site	Western Western Western Western
18 th March	Agona Market Dixcove – landing site	Western Western
19 th March	Axim – landing site	Western
21 st March	Sekondi Harbour	Western
22 nd March	Elmina – landing site Elmina New Market Bantuma – landing site	Central Central Central
23 rd March	Cape Coast – landing site	Central
24 th March	Mankassim Market	Central
25 th /26 th March	Kumasi Central Market Asafo Market – Kumasi Amokom Market – Kumasi	Ashanti Ashanti Ashanti
28 th March	Accra Central Market Agbogbloshi Market – Accra Makola Market – Accra Madina Market – Accra	Greater Accra Greater Accra Greater Accra Greater Accra
29 th March	Tema Harbour	Greater Accra
30 th March	Denu Market Afflao Market	Volta Region Volta Region
31 st March	Review and writing Statistics office – trade data	Accra Accra
1 st April 2011	Debrief with ICFG partners Takoradi value chain meetings	Western

Annex C: Issues probed during field work

Marketing Decisions: to whom is the product sold? where is it sold? why is it sold there?

The first step was to identify marketing channels and actors. This provided the basis for the value chain mapping whilst identifying sites to be visited and actors to be interviewed. Factors which may affect an actor's decision as to where to land fish or where to sell it were also identified.

What are the operational costs involved and how much is the product sold for? – after identifying inputs and their costs, the price they obtain for their product (and the quantities involved) was probed. Prices and quantities vary according to the season. Respondents were therefore asked to distinguish between the bumper season (July to September) and the lean season (remaining months).

Who holds the greatest share of power? – understanding power relations is important in determining whether actors are able to control their activities or whether these are influenced by the actions of others. Actors that form part of an association, for example, are more able to share information, putting them at an advantage over others who act alone. Respondents were asked, therefore, to position themselves on a scale with regards to bargaining power, information concentration, and share of profits. In the former, they were asked which group of actors has the strongest bargaining position with their clients/suppliers and to give reasons why they believe this to be so. To determine information concentration, they were asked which group is more likely to share market information and use this knowledge as a bargaining tool. Questions concerning access to information and from whom it is obtained were also asked. Respondents were also asked if they formed part of any group or association – and asked who they believe enjoys the largest share of profits.

Problems experienced and opportunities identified? – identifying any constraints which respondents feel are hindering them from reaching their full potential as well as any opportunities to enhance their operations.

Credit facilities - Which actors (if any) use credit? Why does one apply for credit? If it's difficult to access credit, why is this? Is credit obtained from financial institutions or individuals? Or both? What conditions are attached to loans? What type of reciprocity is involved?

Individual actors are able to access credit – either from financial institutions or from other actors along the chain. The above set of questions allows the identification of the type of credit being utilised and any conditions that apply.