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A Case Study of Fish Marketing from the Great Lake to Phnom Penh

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Responsibility for the ideas, facts and opinions presented in this research paper rests solely with the authors. Their opinions and interpretations do not necessarily reflect the views of the Cambodia Development Resource Institute.

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Executive Summary

With an inland catch of more than 400,000 tonnes per year and high domestic rates of fish consumption, freshwater fish are one of Cambodia's most important traded commodities. Fresh and processed fish are traded widely within Cambodia, with the majority of trade originating at the Tonle Sap (Great Lake). Fish marketing involves a number of steps and challenges including storage, handling, aggregating enough for a shipment, transportation, negotiating sales, and maintaining quality. Marketing inefficiencies raise costs, which can negatively affect the income of fish marketers as well as fishers and others working in the sector.

To assess current conditions under which freshwater fish are marketed, this study examines fish trade from two major landing sites at the Great Lake to retail markets in Phnom Penh – the largest domestic fish trade route. Findings are based on nearly 60 semi-structured interviews conducted with fishers, traders, distributors, a distribution centre owner, retailers, and government officials. In addition, two "follow the fish" trips were made with shipments from the landing site to the distribution centre in order to directly observe trade conditions and crosscheck information gathered in interviews.

Marketing fish from the Great Lake to Phnom Penh involves three main transactions – sales from fishers to traders, from traders to retailers via distributors, and from retailers to customers. Distributors play a dominant role in the market structure as the financiers of fish trade. They lend capital to traders to support fish purchases and trading activities, and traders re-lend some of this capital to fishers for gear purchases and other expenses. Under the terms of these loans, fishers must sell all fish to their trader (creditor), and traders must sell all fish through their distributor (creditor) and pay associated "commission fees" – usually about 6-8 percent of total sales revenue. These tied relations are common for trade from the Great Lake to Phnom Penh, with most fishers in debt to a trader, and most traders in debt to a distributor.

The current market structure supports a stable fish supply for trade, but the problem of credit dependency places fishers and (to a lesser extent) traders at a disadvantage. Fishers are clearly in a weak position for negotiating the sale of their catch. They must sell to the trader to whom they are in debt. Another problem is the lack of transparent financing costs. Because any interest charged on loans is either embedded in the (discounted) price offered to fishers for fish, or part of the "commission fee" that traders pay to distributors on all sales, the true cost of financing remains unclear. It is likely that lenders (distributors and traders) take advantage of this lack of transparency to increase returns on their loans.

Fish trade is affected by a number of other constraints as well. Traders and distributors criticise distribution centre fees as too high given the lack of services. But with only one centre serving Phnom Penh for each major trade route, they have no (legal) alternative place at which to conduct transactions. Some traders also complain about the fees they must pay along the trade route. Spoilage and weight loss represent a substantial cost at 10-15 percent of shipment weight (or about $55 per tonne). These value losses are compounded by the retail marketing practice of displaying fish for sale without ice. Retailers remove ice because it is the common perception of customers that the presence of ice indicates a lack of fish

freshness. In total, these constraints result in marketing costs that average about $308 per tonne from the Great Lake to retail markets in Phnom Penh. As a result, marketing margins account for roughly 65-75 percent of fish retail prices; fishers receive 25-35 percent.

To improve the livelihoods of fishers through increased returns on their catch, steps need to be taken to reduce marketing costs and inefficiencies. To this end, the following policy recommendations are offered for consideration.

1) **Inject competition into fish distribution services by granting additional licenses for distribution centres.**

2) **Campaign to change consumer perceptions about ice use and the freshness of freshwater fish at retail markets.**

3) **Conduct further technical research on spoilage problems in the marketing of fish from fishing grounds to distribution centres.**

4) **Determine the legality of current fee charges along domestic fish trade routes and eliminate fees that have no clear legal basis.**

5) **Carry out additional research on the role of the informal financing/credit system in the fisheries sector.**

Acronyms and Abbreviations

AFTA	ASEAN Free Trade Agreement
ASEAN	Association of South East Asian Nations
CDRI	Cambodia Development Resource Institute
DANIDA	Danish International Development Agency
kg	Kilogram
R/Riel	Cambodian currency (3,950 R = 1 $)
$	US dollars
WTO	World Trade Organisation

Khmer words

Krom Samaki	Solidarity/collective groups

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Phnom Penh, November 2003

Bruce McKenney and Yim Chea

The Cambodia Development Resource Institute

Chapter 1

Introduction

Cambodia has taken significant steps in recent years to increase its integration into regional and international markets, most prominently through the ASEAN Free Trade Agreement (AFTA) and accession to the World Trade Organisation (WTO). In line with this process, economic development policies have been increasingly focused on improving trade conditions and the climate for investment. As a cornerstone of this approach, the Ministry of Commerce is promoting a “pro-poor trade” strategy aimed at bringing trade and export opportunities to the rural poor. For such pro-poor trade efforts to succeed, domestic market integration and trade efficiencies will need to be improved, especially within and from rural areas.

Freshwater fish are one of Cambodia’s most traded commodities – sold live in containers, fresh on ice, and in a wide variety of processed products. From the Tonle Sap (Great Lake), where more than 200,000 tonnes of fish are harvested each year, fish are marketed across the country with the largest domestic trade route to Phnom Penh (Van Zalinge *et al.* 2000). There are many steps and challenges involved with marketing fish including storage, handling, aggregating enough for shipment, transportation, negotiating sales, and maintaining quality. Inefficiencies in these areas can contribute to higher marketing costs, which in turn can negatively affect the income of, not just fish marketers, but fishers and others working in the fisheries sector as well. This occurs because, as marketing costs rise, fish marketers may need to pass along some of the cost burden to others in the marketing chain (including fishers by way of lower purchase prices for fish). Conversely, when marketing conditions and efficiencies improve, fish marketers, fishers, and others in the sector can benefit from the cost savings.

To improve current understanding about fish marketing costs and efficiencies, this study examines fish trade from two major landing sites at the Great Lake to retail markets in Phnom Penh. Although this represents only one of many ways in which fish are marketed in Cambodia, it is a major one. Substantial fish volumes are traded along this route each year. This study explores a number of marketing issues, including the market structure for trade, the role of financing and credit, and major marketing transactions and constraints. Information and data were collected through nearly 60 semi-structured interviews with fishers, traders, distributors, a distribution centre owner, retailers, and government officials. In addition, researchers made two “follow the fish” trips with shipments from the landing site to the distribution centre in order to directly observe trade conditions and crosscheck information gathered in interviews.

Trader paying retailer for fish at Chrang Chamres Fish Distribution Centre

1.1. Objectives

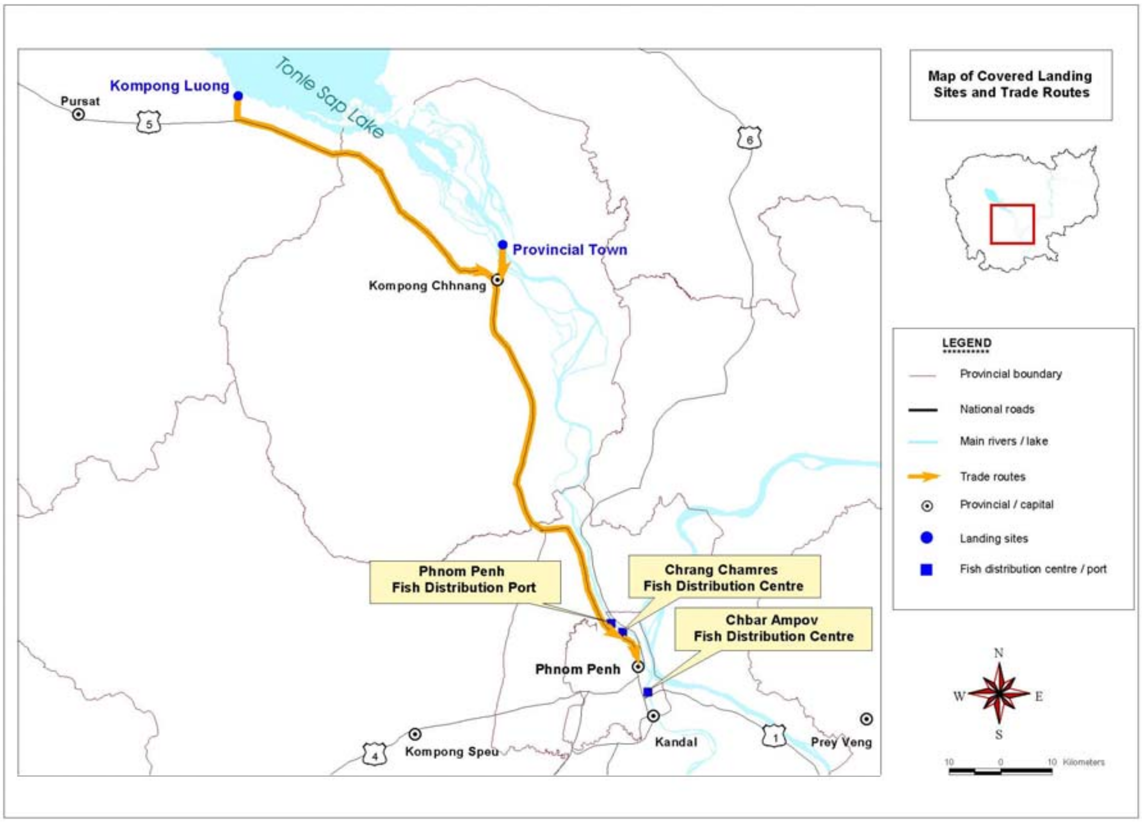
Objectives of this study include identifying constraints, transaction costs, and market distortions in the trade of fish from the Great Lake to Phnom Penh, quantifying the costs of these constraints, and making policy recommendations that support government objectives to increase trade efficiency and reduce poverty. Research was undertaken to complement a larger effort examining market conditions for fish exports from the Great Lake to Thailand (Yim and McKenney 2003). In this light, the study aims to:

- Describe the market structure for fish trade from the Great Lake to Phnom Penh (via National Road no. 5), including key transactions, fish storage and marketing issues, the regulatory framework, and the role of credit (Chapter 2).
- Assess the main challenges to fish trade along this domestic route and quantify associated transaction costs. Estimate costs, fees, profits, and marketing margins (Chapter 3).
- Identify policy recommendations for improving fish trade conditions (Chapter 4).

1.2. Methods

Research in support of this study focused on fish trade activity from the Great Lake to Phnom Penh via National Road no. 5 – a major trade route. Using prepared questionnaires, nearly 60 semi-structured interviews were carried out with fishers (25), traders (11), distributors (7), a distribution center owner, retailers (11), and government officials (2) between December 2002 and August 2003, with all fisher and trader interviews carried out in December 2002. Interviews with fishers and traders were conducted at two major landing sites at the Great Lake: Kampong Luong in Pursat province and Kompong Chhnang provincial town (Figure 1.1). A random selection of seven out of 19 distributors, as well as the centre owner, were interviewed at Chrang Chamres Fish Distribution Center – the largest fish distribution centre serving Phnom Penh. Eleven fish retailers out of about 60 at Orussey and Thmei markets were also interviewed. These interviews focused on identifying and assessing the market structure for trade, marketing challenges and costs, regulatory constraints, and credit issues. Recognising that fish prices are highly variable, it was not the purpose of these interviews to collect fish price information and estimate marketing margins.

Figure 1.1. Map of Covered Landing Sites and Trade Routes



To obtain a “snapshot” of actual marketing margins (and support interview information), two "follow the fish" trips were undertaken on 12-13 and 28-29 December 2002. Researchers traveled in fish trucks with traders from Kampong Luong landing site in Pursat province to Chrang Chamres Fish Distribution Center in Phnom Penh. Then researchers traveled from the distribution centre to retail markets to obtain price information for a select set of fish species. In addition to a snapshot of marketing margins for fish trade, these trips contributed to improved data quality by increasing trust between traders and researchers, allowing for direct observation of trade conditions, and supporting additional collection and crosschecking of cost, fee, and other information.

A number of limitations should be noted here. First, this study only covers trade of fresh fish along one major trade route from the Great Lake to Phnom Penh. Trade of other fish products (e.g., processed fish, marine fish), from other important landing sites and productive fisheries (Great Lake and elsewhere), and/or other trade routes (e.g., from the Great Lake by boat along the Mekong) are not addressed. Resource constraints did not allow for greater coverage.

Resource constraints also did not allow for more comprehensive study of marketing margins. As noted above, the "follow the fish" trips provide only a "snapshot" of fish trade activity during the fishing season, enabling the evaluation of marketing margins on a particular day from landing site to Phnom Penh consumers for *three selected species*. Although these margins provide an indication of net income for actors in the fish marketing chain, this income is known to fluctuate significantly over the course of the year. However, it is important to point out here that marketing costs (transportation, ice, labour, fees, etc.) are less variable, and it is analysis of these costs that is most important for improving trade conditions.

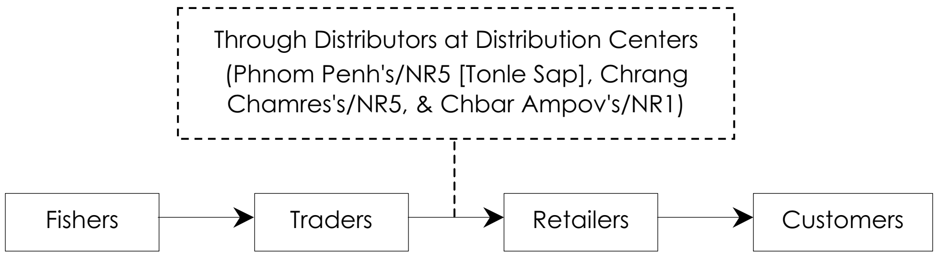
Chapter 2

Market Structure and Transactions

Across Cambodia, most fish are marketed from landing sites located at floating villages or harbor points around the Great Lake and along rivers. Fish are sold live in water-filled metal containers, fresh on ice, and in a variety of processed products. For much domestic trade, retailers purchase fish from traders or go to landing sites to buy directly from fishers. However, distribution centres play an important role in fish trade to urban areas, especially to Battambang and Phnom Penh. For trade to Phnom Penh, municipal regulations intended to relieve traffic congestion require fish trucks to stop and sell fish at licensed fish distribution centres a few kilometres outside the capital.

This section examines the market structure for fish trade to Phnom Penh from two major landing sites at the Great Lake, Kompong Luong in Pursat province and Kompong Chhnang provincial town, with a focus on key actors and transactions, market information and services, and the role of financing and credit. As illustrated in Figure 2.1, the marketing chain for this fish trade route generally involves sales from fishers to traders (Transaction 1), traders to retailers via distributors (Transaction 2), and retailers to customers (Transaction 3). Each of these transactions is assessed in more detail below.

Figure 2.1. Marketing Chain for Fish Trade: Great Lake to Phnom Penh



2.1. From Fishers to Traders (Transaction 1)

Throughout the year, hundreds of traders purchase fish from thousands of fishers at the Kompong Luong and Kompong Chhnang landing sites. Although trade activity is affected by changes in catch levels (peak and non-peak periods) during the year, fishers and traders report that regulations requiring a closed season have little impact due to a lack of enforcement.[1] Fishers interviewed for this study go fishing approximately 200-250 days out of a year, while traders report working almost every day. No distinct gender roles were observed; both men and women work as fishers and traders, often in family units of husband, wife, children, and relatives.

[1] The *Law on Management of the Fisheries Sector of 1987* (No. 33 Kror-Chor) sets a four-month closed season for fishing in order to support fish breeding, spawning, and juvenile growth. The closed season is from June 1 to September 30 north of Phnom Penh and from July 1 to October 31 south of Phnom Penh. Peak periods occur between November and June, depending on the location.

Fishers lifting a gillnet at Tonle Sap, Kompong Chhnang

A typical trader purchases fish on a regular basis from between 30 and 70 fishers. Using a boat, plastic containers, and ice, a trader may collect fish for several days before accumulating enough for a shipment to the distribution centre. During non-peak periods, traders may share a hired truck when they need to ship fish but have not yet collected enough to fill a truck on their own. Most traders transport fish at night so that fish arrive at the distribution centre outside of Phnom Penh in the early morning (about 2 a.m.), where they can be unloaded for sale to retailers, who then bring the fish to market in time for morning customers. A smaller number of traders bring fish for sale to retailers at the distribution centre in the early afternoon.

Although the sale of fish from fishers to traders involves price negotiations, fishers tend to be at a disadvantage due to credit dependency and less market information. Most fishers are in debt to a trader. Fishers borrow from traders (who themselves have often been financed by distributors) to support boat and gear purchases, fuel costs, or when a serious illness results in lost income and/or health care costs. Traders do not charge fishers an interest rate on loans, but require that fishers sell all fish exclusively to them at what may be a somewhat discounted price (which can be viewed as an implicit interest rate on the loan).[2] Fishers payback loans through regular deductions/payments, or in a lump sum at the end of the fishing season.

The financial dependence of fishers on traders clearly puts fishers at a major disadvantage in price negotiations; a fisher has little recourse but to accept prices offered by his/her trader. However, when in need of immediate cash during the fishing season, fishers occasionally sell fish to traders who are not their creditors in order to avoid loan payments. To prevent fishers from selling to other traders (which contravenes the verbal loan agreement), traders often purchase fish from fishers/borrowers at the fishing grounds rather than have them travel to the landing site.

The poor bargaining negotiation position of fishers vis-à-vis traders may be further weakened by a lack of market information. In price negotiation, fishers rely on knowledge of the previous day's fish price, "word-of-mouth" information on prices from other fishers, and

[2] Based on the data collected for this study, it was not possible to estimate the magnitude of the implicit interest rate charged by traders to fishers. Part of the difficulty was in identifying how much the price differs for fishers in debt compared to fishers not in debt for fish of similar value. With so many fishers in debt, it can be difficult to identify a "normal" market price offered to a non-borrowing fisher.

some understanding about the day's catch levels in the area. They usually do not have access to information about how prices at distribution centres and retail markets may have changed since the last time they sold fish. In contrast, traders are in regular communication with distributors by I-com or telephone about day-to-day changes in prices and fish supply/demand at markets, providing an advantage in price negotiations. Traders usually offer a flat price for fish (sometimes regardless of different fish species and sizes). This approach simplifies sales and reduces transaction time, important factors for traders working with many fishers.

2.2. From Trader to Retailer via Distributor (Transaction 2)

The great majority of fish sold in Phnom Penh retail markets have first passed through one of the municipality's three licensed fish distribution centres – Chrang Chamres fish distribution centre (located 9 km north of Phnom Penh along National Road 5), Phnom Penh fish distribution port (located 11.5 km north of Phnom Penh along the Tonle Sap River), and Chbar Ampov fish distribution centre (located south of Phnom Penh along National Road 1). Most iced fish transported from the Great Lake by truck for sale in Phnom Penh are distributed through 19 distribution shops at Chrang Chamres (owned by 18 distributors – one has two shops). Live fish from the Great Lake are more commonly transported by waterway and distributed through 22 shops at Phnom Penh fish distribution port. Fish brought from areas south of Phnom Penh for sale in the capital are usually distributed through 10 shops at Chbar Ampov. In addition to these licensed facilities, there are a number of smaller unlicensed fish distribution centers operating informally around the Phnom Penh area.

Chrang Chamres accounts for the majority of fish distribution activity, followed by Phnom Penh fish distribution port, and Chbar Ampov (Ouch 1996).[3] For this reason, and because it is the major distributor for the Great Lake-Phnom Penh trade route, transactions at Chrang Chamres are the focus of this study (see box).

Chrang Chamres Fish Distribution Center

From 1984 to 1996, the Phsar Touch fish distribution centre located in Daun Penh district near the Cambodia-Japan friendship bridge area was the main fish distribution centre serving Phnom Penh. It was managed under the so-called *Krom Samaki* (solidarity/collective groups), through which the State allocated rights to fish distributors to operate at the centre and charged three percent fees on all sales. As part of the municipality's effort to reduce congestion in the capital, Phsar Touch was relocated to an area along National Road 5 about 9 km north of Phnom Penh and renamed the Chrang Chamres fish distribution centre. Distributors who had owned shops at Phsar Touch were allowed to transfer ownership to shops at Chrang Chamres at no charge. Today, most distributors at Chrang Chamres worked previously as distributors at Phsar Touch.

A private investor financed the construction of Chrang Chamres and its 19 shops under an agreement with the municipality of Phnom Penh and the Ministry of Economy and Finance. According to the agreement, the 8-year investment project runs from 1995 to 2003, with the possibility of extension depending on negotiations between the investor and government. In addition to centre construction, operation, and maintenance costs, the investor pays an annual fee of R2,150,000 ($544) for rental of the state land on which the centre has been built, contributes to municipal development projects (e.g., road repairs), and makes other government tax payments. In return, the investor has the right to charge a three percent fee on all sales at the centre. Any distributor who wants to transfer their shop ownership at Chrang Chamres to a new owner must negotiate this transfer with the distribution center owner and relevant government authorities. According to officials from the Phnom Penh Municipal Agriculture, Forestry and Fisheries office, the distribution center owner and municipality have agreed to a new contract starting in 2004.

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3 Ouch (1996) examined fish distribution statistics for the first eight months of 1996 and found that, of the total fish amount distributed through the three centres, 64 percent were distributed through Phsar Touch Fish Distribution Center (which was later relocated and renamed Chrang Chamres), 24 percent through Phnom Penh Fish Distribution Port, and 12 percent through Chbar Ampov. Although the relocation/renaming of Chrang Chamres outside of Phnom Penh likely caused some decline in overall fish distribution activity, distributors interviewed for this study indicate that Chrang Chamres remains the largest fish distribution centre.

Workers loading fish on to a truck at Kompong Luong landing site, Pursat

However, interviews with distributors at both Chrang Chamres and Chbar Ampov suggest that the three distribution centres function in a similar manner.

Traders bring fish from Kompong Luong and Kompong Chhnang landing sites to Chrang Chamres year round. At the distribution centre, fish are unloaded at a distributor's shop and sold to retailers. Distributors typically work with about 15-25 traders, financing their fish-purchasing activities, providing services such as labour to unload trucks, and in some cases assisting them in price negotiations with retailers. Distributors' most crucial role is in providing the necessary capital to traders for fish purchases (and in turn traders lend some of this capital to fishers). A similar financing chain was found for marketing of fish exports, with exporters financing traders, and traders re-lending some of this capital to fishers (Yim and McKenney 2003).

Not surprisingly, distributors were not forthcoming in discussing the amounts they loan, but in light of the number of traders and amounts of fish purchased for a shipment, financing for fish trade from an average distributor at any given time is likely in the range of \$10,000-\$50,000. Distributors provide this financing from their own capital. Occasionally they borrow on a short-term basis from institutional or private moneylenders to cover short-term credit needs at a monthly rate of 3-5 percent.

In most cases, distributors have known the traders with whom they work for a long time, making trust levels high, and the extension of financing less risky. In return for financing and other services from distributors, traders agree to supply fish exclusively to the distributor, with a verbal agreement that traders will pay the distributor a "commission fee" on each sale of fish to retailers. These fees are typically set at R100/kg (\$0.025/kg) for fish priced lower than R2,000/kg (\$0.50/kg), and R200/kg (\$0.05) for fish priced higher than R2,000/kg. But some distributors set the price line somewhat lower than R2,000/kg and others higher.

Chrang Chamres Fish Distribution Centre

In addition to paying this amount to distributors, traders must pay the distribution center owner a three percent fee on all sales. Distribution centre staff monitor each sale and record the sale amount and price, but they do not collect the three percent fee at that time. Rather the distributor collects it from the trader and settles accounts with the distribution centre staff at the beginning of the following morning.

In total, traders are paying about 10 percent of total sales revenue to distributors and the distribution centre owner – about 6-8 percent to distributors for financing and services and three percent to the centre owner. To illustrate, consider a trader with two tonnes of fish where one tonne is sold to retailers at a price of R1,500/kg (\$0.38/kg) and the other tonne at R2,500/kg (\$0.63/kg). For the first tonne, the trader would receive \$380, but need to pay \$25 to the distributor and \$11 to the distribution centre owner – fees equal to almost 10 percent of the sales revenue. On the second tonne, the trader would receive \$632, but need to pay the distributor $51 and the distribution centre owner $19 – fees equal to 11 percent of sales revenue.

Fish are sold to retailers on a cash or credit basis, depending on the relationship between the retailer and trader/distributor. Retailers who have established long-term relationships with traders/distributors are provided one-day credit, making it possible for these retailers to bring their fish to market and pay the distributor the following day. Under this arrangement, the distributor will provide immediate payment to the trader so that he/she can return to the landing site and begin making fish purchases. Retailers without such long-term relationships with traders/distributors must pay in cash directly to the trader.

2.3. From Retailers to Customers (Transaction 3)

From distribution centres outside Phnom Penh, fish are marketed to major urban markets and supermarkets, restaurants, processors, and roadside meal places in and around Phnom Penh. Some fish are also distributed to nearby provinces, such as Kompong Speu, where local fisheries are limited. This study focuses on retail marketing of fish from two major markets in Phnom Penh – *Orussey* and *Thmei*. During most of the year, retailers at these markets sell 2-5 tonnes of iced fish per day to urban consumers, but this amount can increase significantly during peak catch periods.

This study identified 35 fish retailers at *Thmei* market and 28 fish retailers at *Orussey* market. All retailers are women, though some get assistance from men with de-scaling fish. Although all retailers indicated that they operate their businesses year round, most rent their shops at the market on a monthly basis, while others rent on a daily basis. Retailers generally own containers, cutting boards, knives, and a scale. They go to the Chrang Chamres fish distribution centre to purchase fish at around 3-4a.m. in order to prepare the fish for sale by 6-7a.m. Most retailers operate on a small scale, purchasing 30-70kg of fish per day in a mix of species (less than five species), though some retailers target only one specific species. Several retailers also make purchases at 2-3p.m for late-afternoon and evening sales.

Retailers report that fish sales are highly variable. On the day of purchase from the distribution centre, they often sell all their fish by lunchtime, but sometimes they still have more than half of their fish unsold by the end of the day. Due to this uncertainty, and challenges in keeping fish fresh (see section 3.1.), retailers normally mark up prices by about 30-100 percent over the price of purchase from distribution centres. These prices are set for early morning customers, but can decline considerably over the course of the morning depending on sales. Fish that are not sold by the end of the day are often processed for future sale or sold to small restaurants and roadside meal places at discounted prices, usually at a loss to the retailer. Even when retailers are fortunate enough to sell all of their fish by lunchtime, their earnings are quite modest (see box).

Fish Retailing –

A Good Day at Thmei Market

Ms. Sok[1] purchased 34.5 kg of three species of fish – Sandai (*Wallago attu*), Chhlang (*Mystus nemurus*), and Kes (*Miconema spp.*) – from Chrang Chamres fish distribution centre at a cost of R220,500 (or $55). Compared to distribution centre prices, she marked up fish prices for retail sale by 40-50 percent for each species. Beginning sales at 7a.m. at *Thmei* market, she sold about two-thirds of her fish (23.5 kg) by 9a.m. at the original marked up prices. Between 9-10a.m., Ms. Sok discounted her prices by about 10-15 percent and managed to sell an additional 8 kg, leaving only 3 kg of fish to sell. Finally, discounting to prices equal to or below the fish purchase prices at the distribution centre, she sold all remaining fish by 11a.m.

Ms. Sok considered this to be a good day of fish retailing. Her gross earnings were R28,750 (or about $7). She reported that her gross earnings can range from R10,000-R50,000 (or $2.50-$12.50), but more typically are about R20,000-30,000 ($4-$7.50). The costs involved with operating her fish retailing business are estimated to be about R6,000/day ($1.50/day).

[1] The retailer's name has been changed to respect her wishes to remain anonymous.

Chapter 3

Key Fish Marketing Costs and Constraints

There are many challenges to marketing fish from the Great Lake to Phnom Penh associated with purchasing, handling, storing, aggregating, transporting, and selling activities. Understanding these marketing constraints and risks is important because they negatively affect the income of, not just traders and retailers, but fishers and others working in the fisheries sector as well. This is a crucial point. As marketing costs rise, traders and retailers must pass along some amount of these costs to fishers by way of lower prices for their fish, and to consumers by way of higher retail market prices. Conversely, when marketing becomes more efficient and less costly, some of these benefits will accrue to fishers and consumers.

To obtain an indication of the current marketing margin (i.e., price paid by retail consumer minus price paid to the fisher) for fish trade from the Great Lake to Phnom Penh, price data was gathered for the marketing of three commonly traded species – Chhlang (*Mystus nemurus*), Chhkok (*Cyclocheilichthys spp.*), and Chhdor (*Channa micropeltes*). These data represent a one-day "snapshot" of the average prices of these species for sales from fishers to traders, traders to retailers, and retailers to consumers (Table 3.1). While it is expected that prices at the Great Lake and Phnom Penh retail markets rise and fall together throughout the year with changes in fish supply and demand, marketing margins are expected to be less variable because they are more closely linked to marketing costs (transportation, ice, financing, fees, and spoilage losses), which are more stable throughout the year. Therefore, even a snapshot assessment of marketing margins can provide a useful indication of likely margins (in percentage terms) throughout the year.[4]

Table 3.1. Marketing Margins of Three Fish Species Traded from Kompong Luong to Orussey and Thmei Markets, Phnom Penh (December 2002)

	Chhlang		Chhkok		Chhdor	
Average Selling Prices[a]	**Price (R/kg)**	**% of Final Retail Price**	**Price (R/kg)**	**% of Final Retail Price**	**Price (R/kg)**	**% of Final Retail Price**
Fisher to trader	1,000	24%	1,500	34%	1,700	35%
Trader to retailer via distributor	2,200	52%	2,450	56%	3,586	74%
Retailer to consumer	4,239	100%	4,396	100%	4,867	100%
Marketing margin	3,239	76%	2,896	66%	3,167	65%

[a] Price data were collected through interviews with traders and fishers at Kompong Luong, observation of sales at Chrang Chamres fish distribution centre, and interviews with retailers and observations of sales at Orussey and Thmei markets, December 2002. Because retail prices fall over the course of the morning, the retail price reflected in this table is a weighted average of retail price information collected during this period.

[4] Of course, further research on marketing margins at different times of the year for a variety of species along different trade routes would provide a much more precise estimate of margins, but such an effort was not possible within the resources available for this study.

Marketing margins for the three species examined ranged from about 65-75 percent. Prices offered to fishers represent only about 25-35 percent of the final retail price. However, in interpreting this information, a few points need to be made. First, it is difficult to compare the fish marketing efficiency implied by these margins to other countries because the circumstances of trade (e.g., distance to market, species, etc.) may differ dramatically. For example, a study of fish marketing in Bangladesh suggests lower marketing margins than Cambodia (50 percent), but this is for trade of marine fish (*Hilsha*) from the coast to markets in Dhaka involving a range of different transactions and challenges (Kleih *et al.* 2003). Second, as no comparable study of fish marketing costs has been conducted in the past in Cambodia, it is not possible to assess whether marketing efficiency is improving over time. But this study does provide a modest benchmark for future comparison. Third, before assuming that traders and retailers are making large profits because of their price mark-ups and marketing margins, their costs and risks must be considered (see Table 3.2 and sections 3.1-3.5 below). In addition, retailers only sell small volumes of fish each day (30-70 kg), so even a high margin on each sale may not result in a significant profit.

Fish marketing is affected by a number of costs and constraints, including spoilage and weight loss, distribution controls, transportation and ice costs, financing costs, and fees charged along the road. As shown in Table 3.2, costs average about $268 per tonne to market fish from the Great Lake to Chrang Chamres fish distribution centre. From there, costs to market fish to consumers amount to only about $40 per tonne. For traders, operating and capital expenses represent half of their costs, followed by spoilage and weight losses, financing costs, distribution centre charges, and fees. Retailers incur costs to transport fish from the distribution centre, rent their shop, occasionally purchase new equipment, and pay some minor fees, but have few other expenses. Major fish marketing costs and constraints are discussed in more detail in section 3.1-3.5 below.

Table 3.2. Average Costs to Market Fish from the Great Lake to Retail Markets in Phnom Penh (Traders and Retailers)

Marketers	**Average Marketing Costs**					
Traders	***(R/kg)***		***($/tonne)***[b]		***% of Total***	
Operating and capital costs	531		134.4		50.1%	
Transportation	253	-	64.1	-	23.9%	-
Ice	221	-	55.9	-	20.9%	-
Labour	41	-	10.4	-	3.9%	-
Equipment & materials[a]	16	-	4.1	-	1.5%	-
Spoilage and weight loss		218		55.2		20.6%
"Commission fee" to distributor (financing costs and services)		186		47.1		17.6%
Distribution center owner charge		88		22.3		8.3%
Road/checkpoint fees		35		8.9		3.3%
Total costs – trader		1,059		268.1		100.0%
Retailers		*(R/kg)*		*($/tonne)*		
Operating and capital costs		149		37.8		95.2%
Fees (*pheasi* & sanitation)		7		1.9		4.8%
Total costs – retail		157		39.7		100.0%
Total Marketing Costs		**1,216**		**307.8**		**100.0%**

[a] *R25/kg (or $6.2/tonne) in additional costs covered by distributors for baskets, mats, fiber bags, string, food, and containers.*

[b] *R3,950 = $1 US*

3.1. Spoilage and Weight Loss

According to interviews with traders and observation of fish shipments, spoilage and weight loss rates are equal to about 10-15 percent of total shipment weight (e.g., 100-150 kg out of 1 tonne) from the point of purchase at the village/fishing ground to the point of sale at *Chrang Chamres* fish distribution centre. These losses, which occur due to internal fish matter loss, fish spoilage, evaporation, and other factors, amount to about $55 per tonne.[5] Retailers do not report any noticeable additional spoilage and weight losses involved with transporting fish the short distance from the distribution centre to retail markets in Phnom Penh.

Comparatively, the 10-15 percent spoilage and weight loss rate for trade from the Great Lake to Phnom Penh is about *three* times as high as the 3-5 percent rate estimated for fish exports from the Great Lake to Thailand (Yim and McKenney 2003). In light of the additional handling and transport time involved with exporting fish, this finding is quite surprising. However, traders bringing fish to Phnom Penh suggest that the main reason for higher spoilage and weight loss rates is that fish shipped to Phnom Penh are usually of a lower quality (i.e., less fresh) than fish shipped for export. Therefore, higher spoilage and weight losses can be expected.

Several other factors contribute to spoilage and weight loss, but these problems are similar (or worse) for exporting fish, so they probably do not explain the higher loss rate for trade to Phnom Penh. These factors include: (a) keeping purchased fish in containers on ice for several days (during which time fish begin to degrade) before making a shipment to Phnom Penh; (b) transporting fish by taking them out of their storage containers at the landing site and loading them into bamboo baskets on trucks, rather than shipping in containers; and (c) multiple handling of fish during loading and unloading at different transaction points in the marketing process.

In addition to spoilage and weight losses incurred in marketing fish to Phnom Penh, spoilage (or the threat of spoilage) causes a significant loss in fish value at retail markets. As noted in section 2.3, retailers reduce fish prices over time because customers perceive fish to be less fresh later in the day. In many cases, fish remaining at the end of the day are either processed into a lower value product or sold at a loss. These value-losing approaches to retailing fish must be employed because no ice is used to maintain fish quality when fish are displayed for sale. By the end of the day, fish quality may have deteriorated significantly.

Freshwater fish are displayed without ice for sale at Thmei market

[5] It should be noted that this loss estimate does *not* reflect costs associated with reduced quality (unless fish have been discarded). It was not possible under this research to analyse changes in fish quality or how these changes might affect retail prices in Phnom Penh. Therefore, actual costs due to spoilage are likely to be higher than the estimate of $55 per tonne.

Although retailers recognize the problem, they do not use ice when displaying fish *because customers view ice as an indication that fish are not fresh*. Due to this perception, retailers claim that they cannot use ice (no matter how affordable or sensible for preserving freshness) because customers would not buy their “less fresh” fish. Compounding the problem, retailers presently only use ice to display fish when the quality has deteriorated severely. This can only reinforce consumer perceptions that ice use means fish are not fresh.

Prior to reaching retailers, ice is used to maintain freshwater fish quality throughout the marketing process. When traders purchase fish at the Great Lake, they immediately store the fish in containers with ice. Fish are then transported with ice to the distribution centre. When retailers purchase fish at the distribution centre, they remove any ice prior to transporting the fish to the retail market so that the fish will be “warm enough” when displayed for sale. No ice is used during the course of the day, but if the retailer decides to keep any fish for sale the next day, these fish will be stored on ice overnight. In the morning, the ice will once again be removed before displaying the fish for sale.

Fish from Great Lake on ice at Chrang Chamres Fish Distribution Centre, for sale to retailers

Similar to freshwater fish marketed from the Great Lake, ice is used throughout the process of marketing marine fish from the Cambodian coast to Phnom Penh. However, unlike freshwater fish, retailers at Phnom Penh markets display marine fish for sale *on ice*. Retailers report that customers are accustomed to the use of ice in the storage and display of marine fish. Customers understand that marine fish are caught far from Phnom Penh and therefore need to be kept on ice to preserve freshness. This understanding allows retailers to use ice, preserve quality, and maintain more stable prices for marine fish throughout the day. In contrast, customers for freshwater fish may believe that the fish are caught from nearby fishing grounds, immediately transported to market, and sold fresh with no need for ice. Although this may have been true in the past, it is no longer the case.

Marine fish are displayed with ice at Thmei market

3.2. Monopolistic Control of Distribution

Each major entry point for fish trade to Phnom Penh is served by one licensed fish distribution centre. Fish traded from the Great Lake south to Phnom Penh along National Road 5 are distributed through Chrang Chamres. Likewise, fish transported by waterway from the Great Lake south to Phnom Penh are distributed through Phnom Penh fish distribution port. Lastly, fish traded from areas south to Phnom Penh are transported along National Road 1 and distributed through Chbar Ampov. No other fish distribution facilities are legally allowed to operate in these areas.

Fees at licensed distribution centres are currently set at three percent of sales at Chrang Chamres and Chbar Ampov, and five percent of sales at the Phnom Penh fish distribution port. Traders complain that these fees are much higher than those charged by informal (unlicensed) distribution facilities operating in the area. For example, traders pay an average fee of about $22 per tonne on sales made at Chrang Chamres. In comparison, unlicensed facilities operating nearby only charge a nominal parking fee of R3,000-R5,000 (about $1) per car or pick-up truck of fish. Quantities traded at these facilities tend to be smaller (about 300-500 kg) in order to avoid attracting attention of officials, making fees on a per-tonne basis equal to roughly $2-$3, which is about one-tenth of the fee charged at Chrang Chamres. However, because traders have received warnings that they will be fined if they use unlicensed facilities, trade activity remains limited (less than 1,000 tonnes traded annually at each facility). In comparison, Chrang Chamres supports the distribution of more than 15,000 tonnes of fish each year.[6]

Chrang Chamres and unlicensed facilities offer similar services – water, electricity, concrete areas for trade, and labour to unload fish from trucks.[7] At Chrang Chamres, however, there appears to be some dispute about who is responsible for providing (or paying for) these services. Distributors indicate that the Chrang Chamres owner is responsible for providing

[6] This estimate is based on an extrapolation from trade/sales information provided by seven of the 18 distributors operating at *Chrang Chamres*. As distributors may have incentives to underreport sales, this figure should be view as a minimum estimate of distribution activity.

[7] One unlicensed facility does not currently have a concrete area for trade and would like to make an investment in this service improvement. But due to difficulties in obtaining official approval for the investment and the threat of unaffordable fees, the facility owner has abandoned this potential investment.

labour for unloading trucks and covering electricity and water costs, but in practice distributors provide most of the labour and pay for electricity and water.[8] Given the dependence of traders on distributors, distributors probably pass these costs through to traders in higher financing and service fees (and for the same reason, traders may pass the costs on to fishers).

3.3. Fees Charged Along the Trade Route

In marketing fish by road from the Great Lake (Kompong Luong) to Phnom Penh, traders pay about $9 per tonne in fees to a road investment company near the Kompong Luong landing site and a checkpoint at the Pursat-Kompong Chhnang provincial border. The legal basis and/or authorisation for collecting these fees could not be determined. In addition to these fees, traders complained that when they periodically need to transport fish directly to Chbar Ampov distribution centre, they are stopped at Chrang Chamres and required to pay a fee (about $5 per pick-up truck), even though they are not using the facility and will have to pay the Chbar Ampov fee in full (three percent of sales).

Fees on fish trade from the Great Lake to Phnom Penh are significantly lower than fees charged on fish exports from the Great Lake to Thailand ($83 per tonne) (Yim and McKenney 2003). There appear to be three main reasons. First, more than half of the fees on fish exports are paid at the border (Cambodian and Thai side). Second, although a transport permit is required for transporting fish under the *Sub-decree on Transport of Fisheries Products* (No. 66 Or-No-Kror, 5 November 1988), this requirement only appears to be enforced for fish transported for export (where it often serves as a basis for informal fee collection). Fish traded within Cambodia do not need a transport permit. In most cases, officials collecting fees can distinguish between shipments for domestic markets and export because they know the domestic traders and exporters. Where they are not sure, they will decide based on the trade route, means of transport, and/or species being shipped. Lastly, fees are lower for domestic trade because the fish traded are, in general, somewhat lower quality than those exported. Because (informal) fees often rise with the estimated value of the fish shipment, it can be expected that in absolute terms fees on domestic fish trade will be less than fees on fish exports.

3.4. Transportation and Ice Costs

In addition to costs associated with spoilage and weight loss, distribution centre charges, and road/checkpoint fees, traders incur a range of more typical business-related costs, including transportation, ice, labour, and equipment. These costs amount to about $135 per tonne for trade from Kompong Luong and Kompong Chhnang to the Chrang Chamres distribution centre, with transportation and ice representing about 90 percent of the costs. In most cases, traders transport fish in two stages – by boat from the villages/fishing grounds to the landing site, and by truck from the landing site to the distribution center. The average cost to transport fish over these two stages, including boat depreciation, fuel, and truck rental costs, is about $64 per tonne.

The preservation of fish quality during collection, storage, and transport requires a substantial amount of ice. Fish may be stored for a few days on ice and transport from the landing site to the distribution centre may take several hours (including loading and unloading). From fish purchase at the fishing grounds to unloading at the distribution centre, traders use on average about three tonnes of ice for every one tonne of fish. With ice prices

[8] Distributors claim that these requirements are stated in the centre's "burden book" – the booklet spelling out the conditions of agreement between distributors and the distribution centre owner. CDRI was unable to obtain a copy of the Chrang Chamres burden book to confirm this information.

ranging from $16 to $19 per tonne at Kompong Luong and Provincial Town of Kompong Chhnang, ice costs average about $56 per tonne of fish traded.[9]

3.5. Financing Costs

As discussed in section 2.3, distributors play a critical role in providing financing to traders to support fish purchases and operational costs. While no interest rate is formally charged on this financing, distributors recoup their loans through variable "commission fees" on each sale. Such lack of transparency in borrowing costs may make it difficult for traders to "comparison shop" when they are seeking a loan. However, based on data collected in interviews with seven distributors, it appears that the implicit interest charge is in the range of 50-120 percent. This return to distributors is estimated net of their costs, but some less tangible distributor services could not be netted out (e.g., providing traders with price information and negotiation support).[10]

The tied relationship between a distributor and traders ensures that traders only sell through that distributor. Although the distributor runs some risk that traders will disappear without paying back their loans, this risk appears sufficiently mitigated by the long-term relationships between distributors and traders and the recent use of written loan contracts. Distributors indicate that they experienced more losses a few years ago ($1,000-$2,000 per year), but now loan losses are only an occasional problem. In fish marketing, it appears that traders' risks are much greater than those of the distributors. Traders bear all the risks of variable prices, spoilage, changes in fees, and operational difficulties. In contrast, distributors receive their commission fees largely based on the *amount* of fish sold through their shop, regardless of whether the trader makes a profit or loss on the sale.

9 This estimate is based on prevailing prices at the time of research (December 2002). More recently, it has been reported that ice prices in the Provincial Town of Kompong Chhnang have reached $30 per tonne. This has occurred due to monopolisation of production and restrictions on trade of ice from nearby ice producers in Kompong Speu, who offer ice at a price of $15 per tonne (Cambodia Daily, 16 October 2003).

10 Net of costs, the average distributor earns about $18 per tonne of fish sold through their shops.

Chapter 4

Conclusions and Recommendations

Marketing fish from the Great Lake to Phnom Penh involves three main transactions – sales from fishers to traders, from traders to retailers via distributors, and from retailers to customers. Distributors play a critical role in the market structure, but not so much for "distribution" as for providing financing. Distributors lend capital to traders to support fish purchases and trading activities, and traders re-lend some of this capital to fishers for gear purchases and other expenses. Under the conditions of these loans, fishers must sell all fish to their trader (creditor), and traders must sell all fish through their distributor (creditor) and pay applicable "commission fees". These tied relations are common for trade from the Great Lake to Phnom Penh, with most fishers in debt to a trader, and most traders in debt to a distributor.

While the current market structure helps to support a stable trade of fish, there are a number of potentially negative aspects. First, most fishers are in a weak price negotiation position. They must sell to the trader to whom they are in debt. Second, due to the lack of a transparent interest rate on loans – it is embedded in the (discounted) price that traders pay to fishers for fish, and part of the "commission fee" that traders pay to distributors on all sales – it is difficult to assess the true cost of financing. Lenders are likely to take advantage of this lack of transparency to increase returns on their loans.

In addition to potentially high financing costs, fish marketing is affected by a number of other constraints, including spoilage and weight loss, monopolistic control of distribution, transportation and ice costs, and fees charged along the road. Total marketing costs are on average about $308 per tonne from the Great Lake (via Chrang Chamres fish distribution centre) to retail markets in Phnom Penh. As a result, marketing margins account for roughly 65-75 percent of fish retail prices; fishers receive 25-35 percent. To improve the livelihoods of fishers through increased returns on their catches, steps need to be taken to reduce marketing costs and inefficiencies. To this end, the following policy recommendations are offered for consideration.

1) **Inject competition into fish distribution services by granting additional licenses for distribution centres.**

   Many traders and distributors complained that distribution centre fees are too high given the lack of services. But with only one centre serving Phnom Penh for each major trade route, traders and distributors have no (legal) alternative place at which they can conduct transactions. Without competition, licensed centres have little incentive to reduce fees or improve services. Research for this study identified a number of unlicensed fish distribution centres operating informally outside of Phnom Penh, some of which would prefer to operate on a legal basis but they are unable to obtain a license. These centres should be granted licenses (at an affordable rate), as this would bring competition to fish distribution services. Such competition would improve marketing conditions by putting downward pressure on distribution centre fees while encouraging better services.

2) **Campaign to change consumer perceptions about ice use and the freshness of freshwater fish at retail markets.**

   Spoilage (or the threat of spoilage) of freshwater fish causes significant value losses at retail markets. Although freshwater fish have been stored for several days and transported with ice, retailers display these fish for sale without ice. In contrast, marine fish are displayed with ice despite similar storage and transport conditions. Retailers remove ice from freshwater fish because customers believe its presence indicates a lack of fish freshness. The development of public service announcements could help to change this perception by educating fish customers about trade realities – similar to marine fish, the freshwater fish they consume has been caught far from Phnom Penh and kept on ice for several days before arriving at the retail market. Through an awareness-raising campaign at local retail markets, customers may come to recognise ice in the display of freshwater fish as an indicator of freshness rather than poor quality. This change in perceptions would allow fish retailers to use ice, which would help in reducing spoilage, retaining value, and improving quality. In turn, these improvements would contribute to more stable prices for freshwater fish (as is currently the case for marine fish displayed on ice).

3) **Conduct further technical research on spoilage problems in the marketing of fish from fishing grounds to distribution centres.**

   At 10-15 percent of shipment weight, spoilage and weight loss during the marketing of fish from fishing grounds to distribution centres represents a substantial loss ($55 per tonne). A number of factors contribute to this loss, including limited ice use by some fishers in the storage of their catch, storage of fish by traders for up to one week before shipping to distribution centres, transporting fish in bamboo baskets rather than in containers, and multiple handling of fish in the marketing process. However, without further research on how these storage and handling issues affect fish quality, it is difficult to determine which problems contribute most significantly to spoilage losses or how best to address them.

4) **Determine the legality of current fee charges along domestic fish trade routes and eliminate fees that have no clear legal basis.**

   Informal fees charged on fish trade in Cambodia can have a significant impact on overall marketing costs, especially for fish exports (Yim and McKenney 2003). Although fees appear modest for fish trade by road from the Great Lake to Phnom Penh (i.e., $9 per tonne charged by a road investment company and one checkpoint), these fees should only be paid if they are legal and authorised.

5) **Carry out additional research on the role of the informal financing/credit system in the fisheries sector.**

   Findings from this study and previous research (Yim and McKenney 2003) suggest that, across the fisheries sector, most fishers are in debt to traders and most traders are in debt to distributors, wholesalers, or exporters. Under the terms of lending, debtors are usually required to sell fish exclusively to their creditors at what appears to be a discounted price. The role of informal financing/credit and tied relations in the fisheries sector deserves further study. For example, how do trade relations and prices for fishers and traders in debt compare to fishers and traders without debt? Would greater market information support fishers in negotiating better prices for their fish, or is such information largely irrelevant due to the tied relations under current lending terms? How might transparency about lending rates, terms, and services be improved? What are the benefits of the existing informal system compared to available formal institutional credit? What risks and constraints currently inhibit formal micro-credit institutions from providing credit to traders and fishers? Research in these areas is needed to improve understanding about the existing informal financing system, evaluate its positive and negative attributes, and identify potential steps for improvement.

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Domestic Fish Trade: A Case Study of Fish Marketing from the Great Lake to Phnom Penh

Freshwater fish are one of Cambodia's most important traded commodities. Sold live in containers, fresh on ice, and in a wide variety of processed products, fish are traded widely within Cambodia, with the majority of trade originating at the Tonle Sap (Great Lake). There are many steps and challenges involved with fish trade. Inefficiencies in any area can contribute to higher marketing costs, which in turn can negatively affect the income of, not just fish marketers, but fishers and others working in the fisheries sector as well.

Complementing previous research on fish exports (Working Paper 27), this paper assesses current conditions under which freshwater fish are marketed from two major landing sites at the Great Lake to retail markets in Phnom Penh – the largest domestic fish trade route. Key issues explored include the market structure for trade, the role of financing and credit, and major marketing transactions and constraints. Following which, policy recommendations are provided that aim to bring greater competition in fish distribution, reduce fish value losses, and improve marketing efficiency.

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