

Cross-border trade and food security

Liberia Sierra Leone

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Acronyms

CFSVA: Comprehensive Food Security and Vulnerability Analysis

CILSS: Comité Permanent Inter-Etats de Lutte contre la Sécheresse au Sahel

FAO: Food and Agriculture Organization

FEWS NET: Famine Early Warning System

IITA: International Institute for Tropical Agriculture

LISGIS: Liberian Institute of Statistics and Geospatial Information

LMIS: Liberia Market Information System

MAFFS: Ministry of Agriculture, Food Security and Forestry

MoA: Ministry of Agriculture

P4P : Purchase for Progress

SIPAG: Système d'Information sur les Produits Agricoles en Guinée

STCP : Sustainable Tree Crop Program

WFP: World Food Programme

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Executive summary

The end of the conflicts in Liberia and Sierra Leone has led to an increase in agricultural production and trade. Recent market monitoring activities in both countries have identified cross-border trade as a factor affecting aggregate and household food security. This study aims to further investigate the issue, thereby contributing to a better knowledge of the determinants of household food security. This report offers an overview of the main cross-border trade flows, an analysis of the market actor's characteristics and a discussion of the link between cross-border trade and household food security.

Rice, tubers, pulses and palm oil constitute the core of the household diet in Sierra Leone and Liberia. Local rice varieties are preferred in rural areas, whereas imported rice accounts for the bulk of supply in urban markets. In the aftermath of the 2008 food crisis, gari (processed cassava) has emerged as a substitute for rice in Guinea, Liberia and Sierra Leone. Meat and milk consumption in Liberia and Sierra Leone is low, which explains why the livestock trade remains relatively undeveloped.

Urban demand emanating from Conakry, Freetown and Monrovia drives cross-border flows of local rice, gari, palm oil and groundnuts. **Sierra Leone** is an emerging gari, local rice and palm oil supplier for the Guinean market. Sierra Leone's monthly gari exports to Guinea exceed 1,000 tons. **Liberia's** Ganta market (Nimba County) handles some 90,000 liters of palm oil every week, making it one of the region's largest. In addition to being a net food importer in its own right, **Guinea** functions as an interface with regional markets, including Senegal and Mali. Groundnuts are imported from Mali through Guinea. Cross-border trade with **Côte d'Ivoire** provides vital imported rice supplies to the chronically food insecure Liberian southeast.

Food markets in Liberia and Sierra Leone successfully link consumers and producers, but suffer from essential shortcomings. A high degree of concentration exists in the interdependent imported rice and cocoa market chains. Three importers handle 75% of the imported rice business in Liberia. The local rice market is thin; local rice prices in Sierra Leone are twice as volatile as those of the imported variety. Exchange rate variations influence the direction of cross-border trade flows. Market response capacity suffers from poor transportation, lack of credit and low demand.

Buoyant market conditions for both palm oil and cocoa have worked to the advantage of producers. Cross-border trade supports food security; notably in the case of palm oil producers in Liberia and cash crop producers. Sierra Leone's gari exports provide a cheap source of food for urban households in Monrovia and Conakry. Instability in Guinea or Côte d'Ivoire would constitute food security risks for Sierra Leone and Liberia.

This report identifies actions that can be taken to improve monitoring systems. **Guinean markets** should explicitly be analyzed in Liberia and Sierra Leone market monitoring activities. **Exchange rate variations** should be tracked. The performance of the **gari market** indicates potential for local procurement of the commodity, were the commodity fortified to meet nutritional requirements. Food security programs should support **food processing** activities in market chains linked to the vibrant regional trade in palm oil and gari. Constraints in market response capacity argue for an incremental approach to **cash transfer programs** in rural areas.

1. Background, objectives and methodology

1.1 Background

The purpose of this paper is to strengthen the knowledge of markets and food security in Liberia and Sierra Leone. As both countries continue their recovery from conflict, food production levels have increased and trading patterns are becoming reestablished. These trends can be presumed to influence both household food security opportunities and the food policy environment. Indeed, market monitoring work carried out in Liberia and Sierra Leone since 2008 have identified cross-border trade as an influence on domestic food prices and availability (LMIS, 2009 and WFP, 2009). This paper intends to shed light on this phenomenon in order to inform decision making in the field of food security in Liberia and Sierra Leone.

1.2 Objectives

Overall, this study aims to illustrate the role cross-border trade on household food security. In this view, this document maps out cross-border food flows for key commodities, namely rice, gari and palm oil. The document analyzes markets' ability to support aggregate and household food security. This paper discusses implications for the design of food assistance programs, early warning systems and food procurement (including purchase for progress - 'P4P') activities.

This report is meant to function in complement to the markets mapping exercise led by FEWS NET in Freetown in April 2010. The information presented will feed into the Liberia and Sierra Leone Comprehensive Food Security and Vulnerability Assessments (CFSVAs) which are being drafted in 2010. The study also peruses data collected in Liberian and Sierra Leonean markets since 2008. Finally, this report follows up on the results of the recent study on market and cross-border trade in the 'western basin' (CILSS, FAO, FEWS NET, WFP, 2010).

1.3 Methodology and limitations

The mission visited 9 main market towns in Liberia and Sierra Leone.¹ Data was collected from trader focus groups, using a market questionnaire. Data collection took place from May 11, 2010 to May 18 2010, a time of year falling between the main rice harvest and prior to the lean season. At the time of data collection, the palm oil marketing season was underway; the main cocoa and coffee harvest had ended. In producing areas, local rice marketing was taking place. Price data collected by WFP since 2008 was used to ascertain the degree of market integration. Price data from the Liberia Market Information System and WFP Sierra Leone were used.

The mission included participants from Liberia's Ministry of Agriculture, the Liberian Institute for Statistics and Geospatial Information (LISGIS), Sierra Leone's Ministry of Agriculture, Forestry and Food Security (MAFFS), FEWS NET, CILSS and the World Food Programme (WFP).

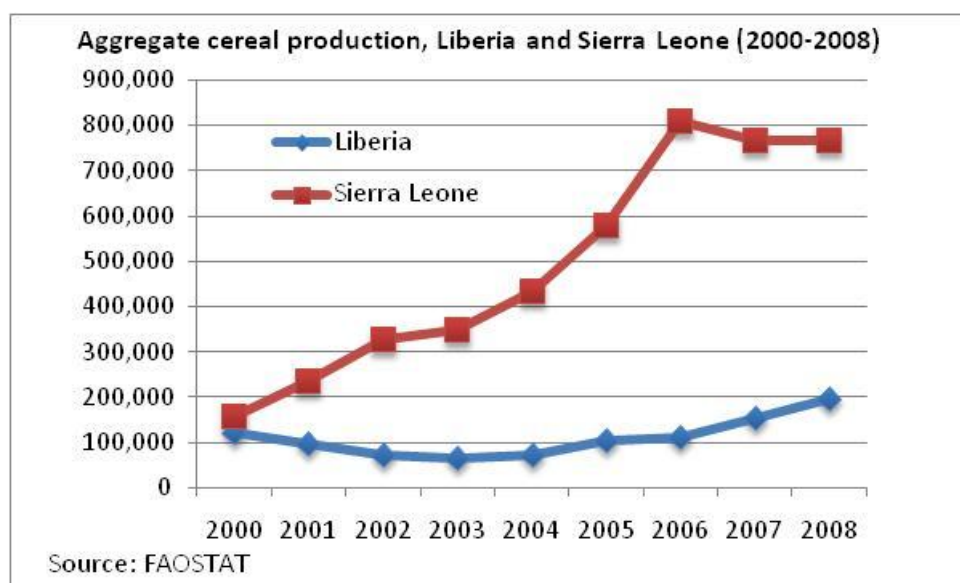
¹ Liberia : Bo Waterside, Foya, Voinjama, Ganta, Gbarnga. Pleebo was not visited due to security concerns at the time of the mission. Sierra Leone : Barmoi, Kenema, Kailahun, Koindu.

The intent of this report is to provide illustrative information on cross-border trade dynamics for Liberia and Sierra Leone. Readers are warned that estimates of cross-border trade volumes presented are prone to substantial seasonal variation. Traded volumes are likely underestimated, as the mission did not cover all cross-border markets and chose to focus on a specific commodity group.

2. Trade flow maps

The return to peace and security in Liberia and Sierra Leone has led to the reestablishment of domestic and regional trade flows. Figure 1 illustrates the rebound in cereal production that has taken place in both countries in the aftermath of the conflicts (2002 in Sierra Leone, 2004 in Liberia). According to the estimates available on FAOSTAT, cereal production doubled between 2000 and 2008 in Liberia, and quadrupled in Sierra Leone over the same period. Liberia's lesser performance could be attributed to the fact that the conflict there only ended in 2004, allowing less time for the recovery of agricultural activities.

Figure 1: Aggregate cereal production in Liberia and Sierra Leone (2000-2008)



Notwithstanding this rebound in cereal production, both Liberia and Sierra Leone have remained food-deficit countries, respectively importing between a third and a quarter of their total annual cereal requirements (Liberia 2008, WFP 2008b). Improvements in agricultural production in recent years have gone hand in hand with an increase in regional food trade flows that are mapped out in this section. Commodities analyzed below include local and imported rice, palm oil, groundnuts and gari.

From a food security perspective, the most noteworthy cross-border trade flows are imported rice from Côte d'Ivoire to chronically food insecure south eastern Liberia, and palm oil from both Liberia and Sierra Leone to Guinea. Sierra Leone is emerging as potential food supply source for the Guinean and Liberian markets. Indeed, Sierra Leone is the principal gari source for the urban markets of Conakry and Monrovia. Furthermore, Sierra Leone also exports substantial quantities of local rice to Guinea. Overall, strong Guinean demand for local rice and gari (mainly from Sierra Leone) and palm oil (from both Liberia and Sierra Leone) drives significant cross-border trade flows.

2.1 Rice

Imported rice is most commonly traded within national borders in Liberia and Sierra Leone, with exceptions. According to the 2007 Liberia Market Review, South eastern Liberia relies on imported rice supplies from neighboring Côte d'Ivoire, due to poor road links with Monrovia, the main port of entry in Liberia. Food security analysis work carried out in Liberia since 2006 has shown that southeastern Liberia is a chronically food-insecure area. Similarly, key informants report that the somewhat remote Pujehun district of southeastern Sierra Leone had long acquired imported rice (both 'parboiled' and 25% broken) from Liberia through the Bo-Waterside market. Restrictions on the re-export of imported rice enacted in Liberia since 2008 have reduced flows of imported rice from Liberia to South Eastern Sierra Leone. In both of these cases, remote areas of Liberia and Sierra Leone turn to the cheapest source of imported rice, which happens to be a neighboring country.

Cross-border flows of imported rice take place when price differentials are sufficient. Exchange rate fluctuations can create or remove incentives for cross-border trade in imported rice. When the Liberian dollar weakened against the CFA franc in mid-2008, imported rice supply in the Liberian southeast suffered. Traders reportedly began shipping in imported rice from Monrovia by ferry instead of importing expensive supplies of the commodity from nearby Côte d'Ivoire. The trade flow returned to normal when the Liberian dollar strengthened against the CFA franc in late 2008. Similarly, data from the Liberia Market Information System (LMIS) shows that imported rice re-exported from Guinea was found in the Liberian markets of Sacilepea (Nimba county) and Gbarnga (Bong county) in late 2009. At that time, the value of the Guinean franc against the Liberian dollar had eroded to the point of making such re-exports to Liberia profitable. In 2009, Guinea had adopted measures to keep the price of rice unusually low, resulting in an exceptional level of rice imports in Guinea that year, thought to have exceeded 400,000 tons (Neumayer, 2009). This exceptional level of imported rice availability in Guinea might have temporarily driven cross-border exchanges of the commodity.

Urbanization, higher prices since 2008 and a strong underlying preference for the commodity are driving an intensifying cross-border trade in **local rice**. The Kambia district of western Sierra Leone routinely exports parboiled local rice to nearby Conakry (Map 1). Guinea's Système d'Information sur les Produits Agricoles en Guinée (SIPAG) estimated that on average, some 360 tons of local parboiled rice entered Guinea from Sierra Leone every month during the final quarter of 2009. It is likely that these numbers are underestimated, as they only reflect quantities received through the border post at Pamélap. These volumes transit through Barmoi international market in Kambia. In Liberia's Lofa county, increased country rice production in the Foya and Voinjama districts might lead to exports to neighboring countries in the future. However, distance from markets and poor infrastructure is likely to limit the competitiveness of Lofa county rice producers in the near term.

Map 1: Flow of local parboiled rice – Sierra Leone to Guinea, May 2010



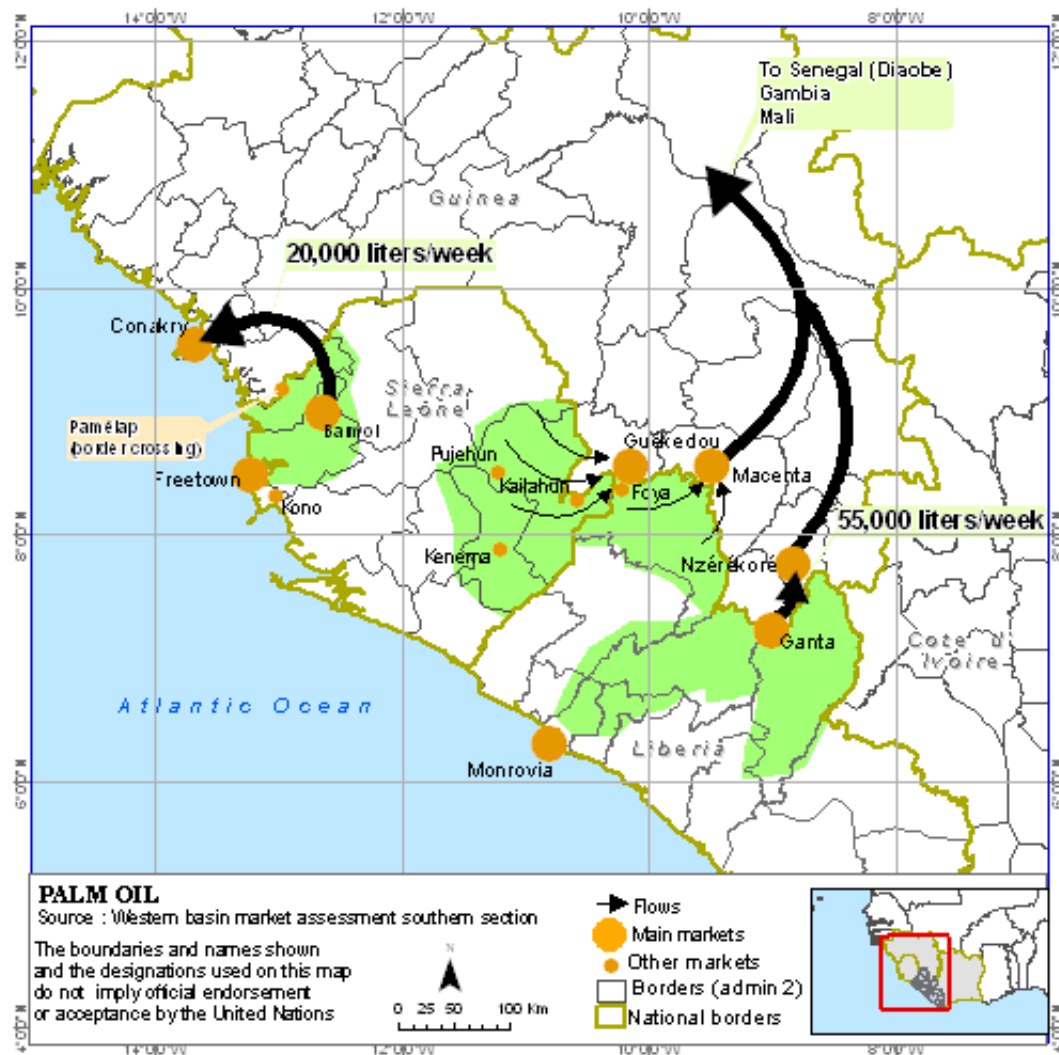
2.2 Palm oil

Palm oil is the main source of dietary fat in Sierra Leone and Liberia. According to FAOSTAT, palm oil consumption amounted to some 198 kcal per person per day in Sierra Leone, and 327 kcal per person per day in Liberia in 2007. In addition to its contribution to the diet, the commodity is an income source for to producer households

The palm oil trade crosses borders, as surpluses from Sierra Leone and Liberia find their way to Guéckédou market in Guinea (Map2). Key informants estimate that the wholesale palm oil market in Ganta (Nimba County, Liberia) handles some 90,000 liters of palm oil every week during the marketing season, of which 60 percent are exported to Guinea. Those volumes make Ganta one of the largest regional palm oil markets in the basin. In Sierra Leone, Barmoi international market (Kambia) handles approximately 30,000 liters of palm oil every week, two-thirds of which are traded to the markets of Madina and Bonfi in nearby Conakry. SIPAG reports that some 30 to 130 tons of palm oil from Sierra Leone transit through the Pamélap border post every month. Some of Guinea’s palm oil imports are re-exported, and make their way to Diaobé market in southern Senegal, where the commodity is passed on to Senegalese and Gambian traders. According to

CILSS *et al.*, Diaobé market handles 2 million liters of palm oil every year (down from a peak of above 5 million liters before 2007). The retail price of palm oil in Senegal is twice that of Liberia illustrating the incentive to export the commodity to markets in the north. The market system links Liberian and Sierra Leonean producers to urban consumers as far as Dakar, Senegal.

Map 2: Palm oil cross-border trade flows, May 2010

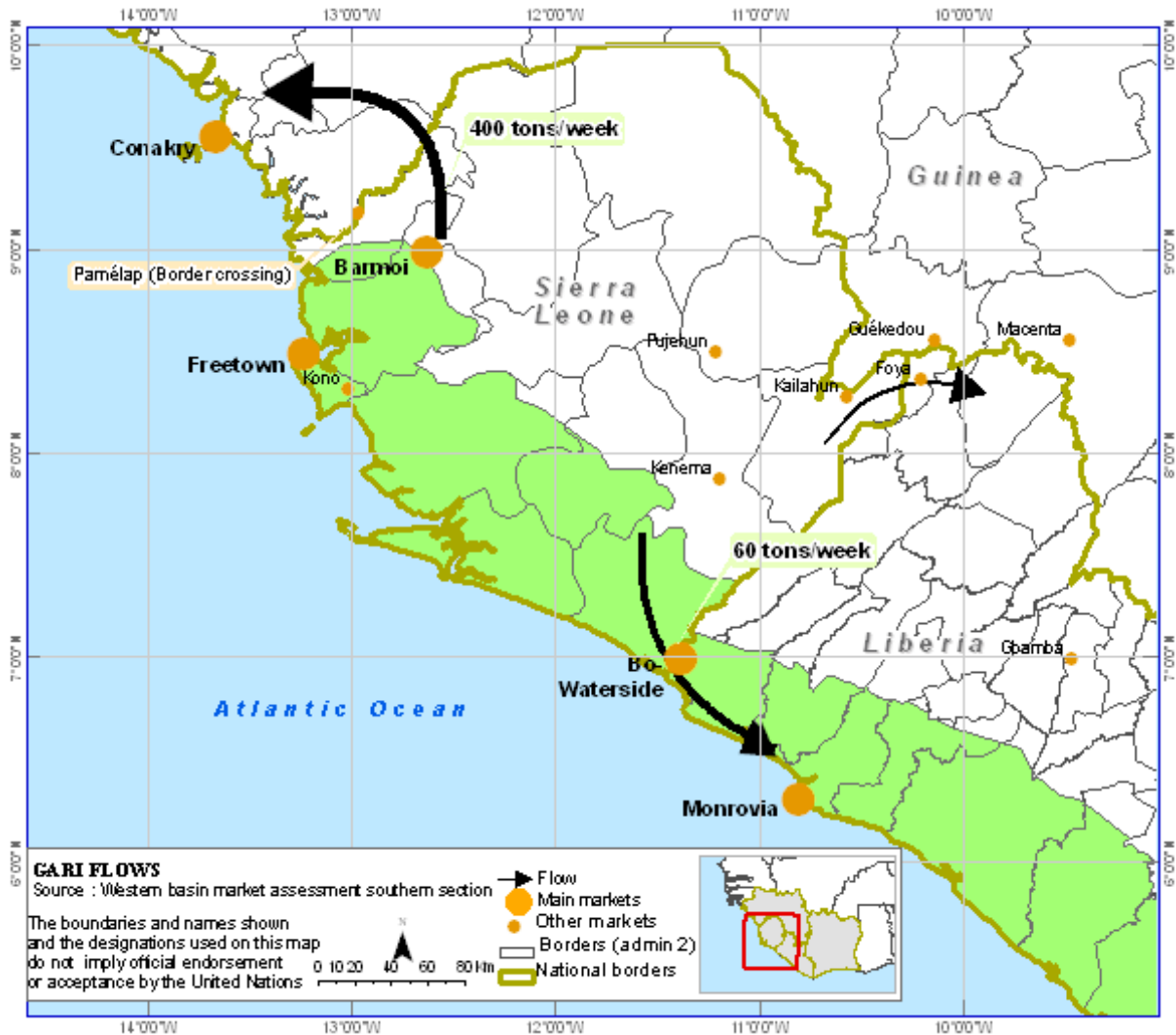


2.3 Gari

Gari, a processed form of cassava, is a close substitute for rice: gari and rice are used interchangeably in many Liberian or Sierra Leonean dishes. Gari consumption has sharply increased in the aftermath of the exceptional rise in the price of rice in 2008. Small processing units in Sierra Leone offer a market to producers of cassava tubers.

Gari surpluses from coastal Sierra Leone are exported to Guinea through Barmoi (some 300 to 400 tons per week) and to Liberia through Bo-Waterside (some 60 tons a week). Sierra Leone is the main source of the gari found in Duala market in Monrovia. The gari trade is of much smaller scale than that of imported rice. It nonetheless has considerable potential to develop to meet surging urban demand in both Freetown and Monrovia.

Map 2: Gari cross-border trade flows, May 2010



2.4 Cocoa and coffee

Cocoa and coffee are mainly produced in Lofa, Bong and Nimba counties in Liberia and in Kailahun, Kono, Kenema districts in Sierra Leone. Cocoa production is currently being sustained by record-high world prices. Other studies have established that cocoa and coffee production tend to flow to the market where prices are most attractive, irrespective of borders (IITA, 2004). In the field, key informants confirmed this assessment, reporting that cocoa from Côte d'Ivoire is routinely exported through Liberia. This flexibility in trade flows implies higher farm gate prices than in the alternative of a compartmentalized market.

It is noted that the road linking Kenema to the Kailahun district, currently in a state of disrepair, is being resurfaced. This is expected to increase trade flows through the Kailahun-Kenema-Freetown corridor, including produce that may be of Liberian and Guinean origin. Farm gate prices for producers may also improve.

2.5 Groundnuts and pulses

Groundnuts and pulses offer a source of protein in a context where animal protein intake is low. Groundnuts are commonly used in sauces, whereas pulses tend to be eaten with rice or on their own.

Quantities of groundnuts are imported from Guinea and Mali to Sierra Leone. Some 400 tons of shelled groundnuts enter Sierra Leone through Barmoi international market every week, year round. SIPAG data corroborates this level of trade. Similarly, Liberia imports groundnuts from Guinea to compensate for shortfalls in domestic production. Pulses reach Liberia from Séguéla market in Côte d'Ivoire, in quantities that the mission was not able to ascertain.

2.6 Livestock

Liberia and Sierra Leone are not major livestock rearing areas. Meat and milk consumption are low in both countries. As such, demand for meat is largely satisfied through domestic sources for small ruminants and from the north - including Guinea and Mali - for cattle. Livestock supply increases in the rainy season due to household needs for agricultural inputs. In the dry season, animals are in better shape, supply is lower and prices higher. In Liberia and Sierra Leone, livestock traders travel from community to community to buy animals. These animals are taken to enclosures located on main roadways. Livestock are taken from such enclosures to urban areas. Some 80% of livestock sold in Sierra Leone are to Freetown, with the remainder to urban areas such as Makeni or Liberia.

Trade flows: Key points

- ✓ Urban demand emanating from Conakry, Freetown and Monrovia drives cross-border flows of local rice, gari and palm oil and urban and rural demand for groundnut.
- ✓ Cross-border trade with Côte d'Ivoire provides vital imported rice supplies to the chronically food insecure Liberian southeast.
- ✓ In addition to being a net food importer in its own right, Guinea functions as a conduit to regional markets.
- ✓ Sierra Leone appears to be an emerging gari, local rice and palm oil supplier.

3. Market Performance

This section outlines the main characteristics of the trading system, in the objective of determining markets' ability to support household food security outcomes. It successively discusses market structure, market conduct, market integration and market response capacity. The section relies on primary trader interviews and on price monitoring data.

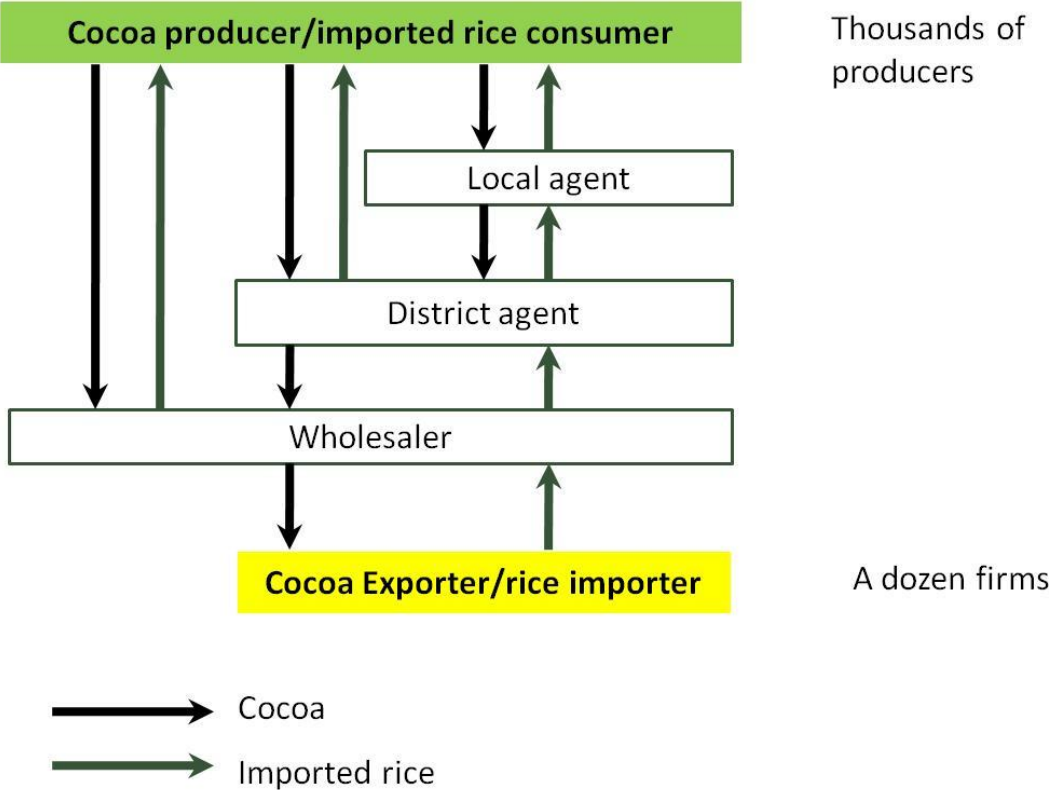
3.1 Market structure

In Liberia and Sierra Leone, markets are expanding due to improvements in security, the return of displaced populations and population growth in urban areas. The number of traders is increasing, reflecting the improving business environment of the past years. On average, the number of imported rice retailers has increased by two thirds compared to 2005 on surveyed markets. The number of imported rice wholesalers has doubled on the same markets over the same period.

Although local markets attract more traders – a factor expected to enhance alternatives for the consumer- it is noted that the rice import business remains highly concentrated, with a handful of companies holding large market shares. Three importers hold 75% of the rice import business in 2008 in Liberia (Liberia, 2008). Six firms are said to account for 90% of imports to Sierra Leone, which is indicative of a high degree of market concentration. Some of these firms, such as TAJCO, have operations in other West African countries. The strong level of concentration can be attributed to the exigencies of the international rice trade. In order to buy from rice exporters, international rice traders require 'letters of credit' that banks in Sierra Leone and Liberia do not deliver. Although there is no evidence that this has occurred, the high concentration in the rice import business might potentially create opportunities for collusion among importers, to the disadvantage of consumers.

The same phenomenon exists in the cocoa export business. It seems that the high financial requirements to enter the trade in imported rice and cocoa exclude smaller traders from the business. Interestingly, the cocoa and imported rice market chains are tightly intertwined – the cocoa buyer is an imported rice seller, the cocoa seller is a rice buyer (Fig 4). Cocoa and rice are bought and sold from the same shops. As both markets are concentrated, the cocoa/rice traders wield a high degree of influence on producer food access.

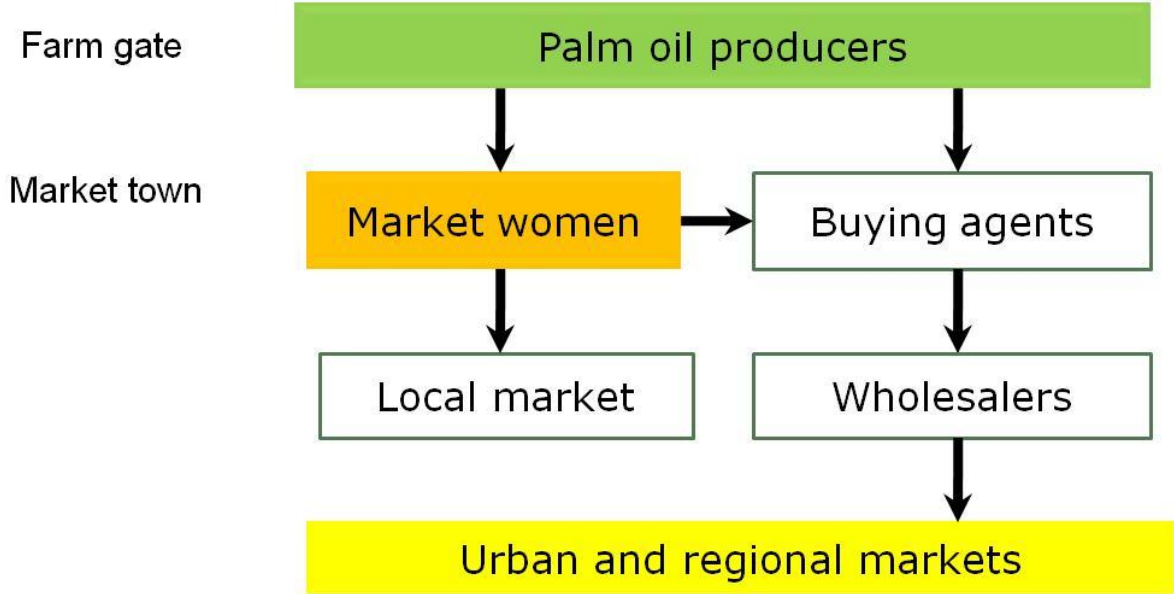
Figure 4: Simplified cocoa and imported rice market chains Liberia, Sierra Leone



Source: key informants

The palm oil market chain is fairly short, and functions through two channels, the first for local consumption – often producer/processors – and the second linked to the regional palm oil trade (Fig. 5). Local market women are key players in both channels. High demand for palm oil in recent years has led to the expansion in the number of ‘buying agents’ on local markets, whose role is to secure palm oil quantities for wholesalers against advance payment. In border areas of Sierra Leone and Liberia, these agents are usually Guineans employed by wholesalers from Guéckédou and Macenta markets. This competition for palm oil in producing areas is presumed to have sustained favorable farm gate prices for palm oil.

Figure 5 Simplified palm oil market chain in Liberia and Sierra Leone



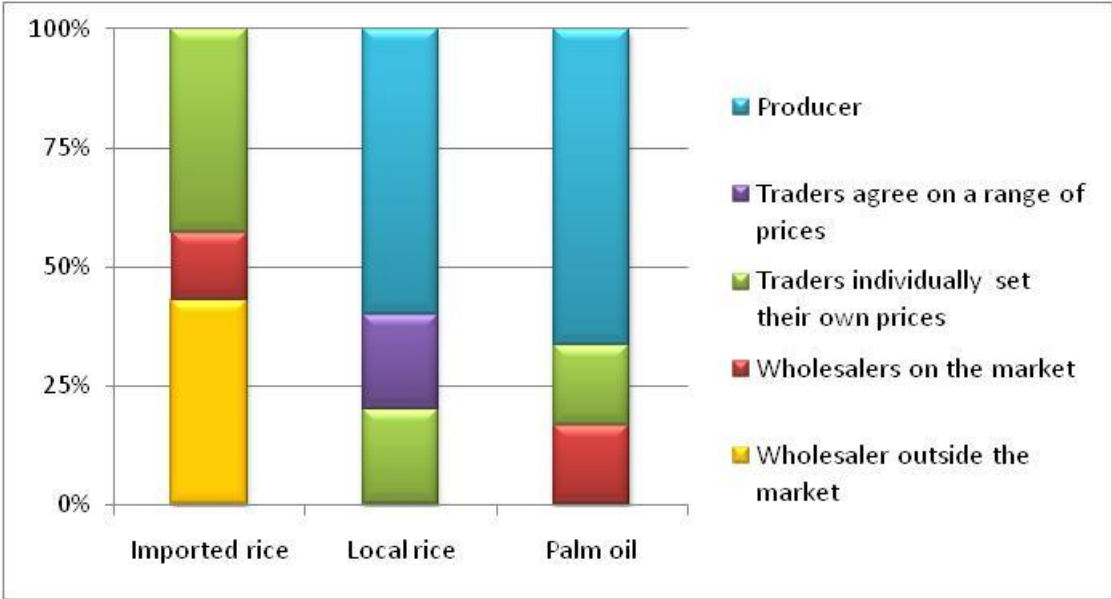
Source: key informants

Traders of similar social backgrounds have created networks in Liberia and Sierra Leone. Lebanese traders tend to dominate the imported rice/cocoa export trade. Guinean traders are influent in the regional palm oil business, which can perhaps be explained by their status as middlemen between producer areas and deficit areas (Guinea itself, and also Senegal and Mali). Liberian and Sierra Leonean traders tend to be more active in the palm oil export trade overseas markets. Women from the Kpelle ethnic group are specialized in the groundnut and pulse trade in Guinea, Côte d’Ivoire and Liberia, travelling from market to market on a weekly basis. Most livestock traders are of Fulani origin. Membership in such networks allows traders to deal with constraints (outlined in paragraph 3.5), access market information and share risk.

3.2 Market conduct

Market structure largely determines price setting practices. As figure 6 shows, producers set the price of palm oil and local rice on more than half of markets – the short market chain for crude palm oil and local rice offer a strong bargaining position for producing households. Transactions for these commodities take place in villages and in cash or against advance payment. By contrast, on more than half of the markets, prices of imported rice market are determined by wholesalers, reflecting the concentrated nature of the imported rice business.

Fig 6: Price setting for imported rice, local rice and palm oil (% of surveyed markets, May 2010)



Source: key informant interviews

Advance payments to cash crop producers commonly take place in Liberia and Sierra Leone. In the case of palm oil, for instance, it is difficult for a trader to travel to a farm and expect to purchase significant quantities of palm oil on the spot. In practice, traders would identify a local agent, and provide advances to secure future deliveries of palm oil. Producers are therefore in a strong bargaining position with prospective buyers. The impact on food security is potentially positive – producers receive resources during the lean season, allowing them to maintain their food consumption levels above what they would otherwise be. The same practice is reported for cocoa, a cash crop benefiting from high prices in recent years. The local agents of Lebanese traders will provide cocoa producers loans during the lean season – cash and in-kind. Although the mission did not witness the practice of advance payment in the case of the local rice market, its existence cannot be dismissed. Advance payment is a mechanism that traders use to secure market share for a sought-after commodity.

As outlined in the 2006 CFSNS, 49 percent of Liberian households purchase food on credit from retailers. Such in-kind credit is the main source of rice for 12 percent of Liberian households. In Freetown, short-term and interest free credit to consumers seems to be a common practice, to the extent that debt recovery constituted retailer’s biggest difficulty during the high food price crisis (WFP, 2008). The cash for work baseline study carried out in Western Area also indicates that taking on credit is a major coping strategy for food insecure households (WFP, 2009). In both Liberia and Sierra Leone it was noted that customers demand for credit increased when prices rose in 2008, illustrating credit’s role as a coping mechanism. Access to credit is limited to households who have strong personal relationships with a local trader.

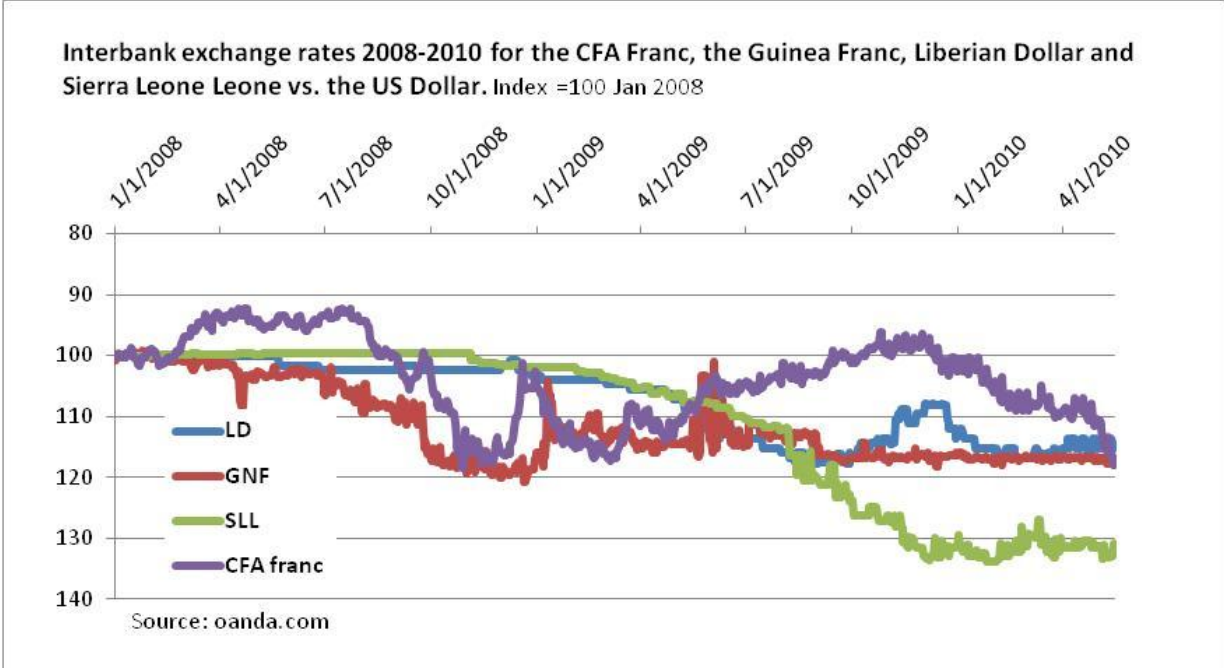
According to the market interviews, the extension of credit to consumers is a common practice in half of the markets. When traders sell commodities on credit, no interest is charged. It seems that the short-term, interest free in-kind loan is the main form of

consumer credit. Nonetheless, access to credit in Liberia and Sierra Leone seems limited compared to the other countries of the Western basin. CILSS *et al.* claim that some 84% of grain retailers will sell on credit in a sample of traders interviewed in Gambia, Guinea, Guinea-Bissau, Mauritania, Mali and Senegal. It seems that it is more common for a Liberian or Sierra Leonean consumer to borrow cash from a relative or through a 'susu' club (group savings) and use that to purchase food than it is to obtain credit from a retailer.

3.3 Exchange rate and cross-border trade

Liberia, Sierra Leone and neighboring countries maintain national currencies, which implies that exchange rate movements can determine trade incentives and producers' competitiveness. Although the US dollar is the currency of choice for imported rice wholesalers in Guinea, Liberia and Sierra Leone, transactions commonly take place in national currencies in cross-border markets.

Fig 7: Exchange rate trends for the national currencies of Côte d'Ivoire, Guinea, Liberia, Sierra Leone.



Since 2008, all three currencies have declined in value compared to the US dollar (Fig. 7). The rate of decline has been sharpest for the Sierra Leone Leone, which, by May 2010, had lost a third of its value against the US dollar since January 2008. The decline has been less pronounced for the Liberian Dollar and the Guinean Franc. The devaluation of the Leone relative to the currencies of its neighbors has supported the competitiveness of Sierra Leone's exports to neighboring countries, including gari and palm oil. However, the trend also makes imports more expensive and may to some extent explain why real imported rice prices remained at record levels well into 2009 in Freetown (WFP, 2009). The data presented above refer to interbank rates, which are not necessarily those applied on cross-border markets.

In late 2009, the rapid devaluation of the Guinean franc had an effect on the direction of cross-border trade flows: the LMIS database shows that imported rice re-exported from Guinea appeared in the Liberian markets of Ganta and Saclepea (Nimba country). In Ganta, key informants report that exports of palm oil to Guinea slowed at the time, as traders waited for the exchange rate to improve. During the same period, coffee and cocoa from Guinea began appearing in the markets of Liberia, where prices had become more attractive. Guinea has had a history of macroeconomic instability in the past decade. The volatility of the Guinean franc seems to have an influence on trade with Liberia and Sierra Leone.

Overall, the Liberian currency has been the most stable against the US dollar over the past three years (it has, however, varied substantially against the Euro). Liberian consumers benefit from a strong Liberian Dollar which makes imported goods cheaper. The Liberian dollar's stability, were it to last, would make Liberian palm oil exports less competitive relative to those of Sierra Leone.

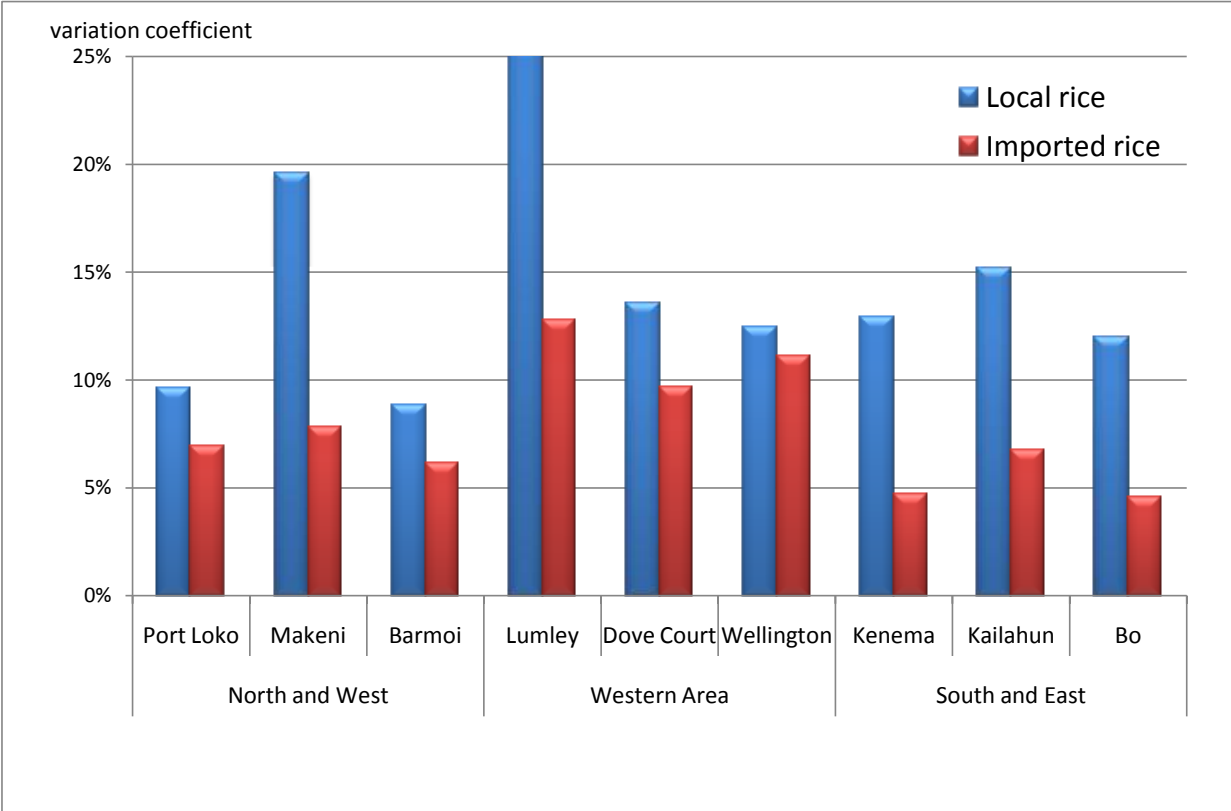
3.4 Market integration

An assessment of market integration can help determine the extent to which markets are linked. A system within which markets that is strongly integrated is thought to be generally supportive of household food security: reliable market access for producers, affordable prices and consistent availability of products for consumers. Conversely, weak integration would imply poor market access and low prices for producers, whereas consumers would face volatile prices and irregular supply.

Secondary data is used to assess the extent to which markets are integrated in Liberia and Sierra Leone. Analysis is performed on the basis of monthly price data from Liberia and Sierra Leone from January 2009 to March 2010. As information systems in both countries are relatively new, the analysis is therefore limited by the short length of the available data series. Two indicators are calculated: the volatility of prices on each market, and price correlations between markets.

The data series show that the most volatile market for imported rice are Pleebo in Liberia – an isolated market located in South Eastern Liberia, which has gone through shifting trade flow origins in past years, alternating from Côte d'Ivoire to Monrovia and back. Prices in the Liberian south east are the highest in that country. In Sierra Leone, the market in Kailahun is the most expensive. It is presumed that in both markets, poor road access contributes to high prices year round and to price volatility in the rainy season. High price volatility is a barrier to household food access in these isolated markets.

Fig 8: Stability of local and imported rice in Sierra Leone, Jan 2009-Mar 2010



Source: authors, using WFP Sierra Leone price data

On average, local rice prices are twice as volatile as those for imported rice, indicative of the highly seasonal nature of local rice supply in Sierra Leone. The instability in local rice prices limits producers’ and consumers’ interactions with the market. The capacity of the local rice market chain to meet increases in demand is therefore limited, especially in the lean season. However, there is evidence of sustained food flows for parboiled local rice between Sierra Leone’s Kambia district and Conakry, indicative of a degree of integration across borders.

Analysis of correlation coefficients (output tables provided in Annex I) show that the best performing markets are located in the central belt of Liberia, where transport infrastructure is adequate and where population densities are higher. The more remote markets – such as Kailahun in Sierra Leone, and those of Lofa and Maryland Counties in Liberia – show low correlation coefficients and seem less well integrated to the core of the market system. In Sierra Leone, data suggests a limited degree of market integration for both imported and local rice. The average correlation coefficient in Liberia is 0,46, and 0,36 in Sierra Leone. In Senegal, the average correlation coefficient presented in WFP (2009) was 0,7. The average price coorelation for a dataset in Niger reached 0,56 (Acker, 2008). The apparent weakness of price coorelation in Sierra Leone and Liberia might indicate a lesser degree of market integration in than in other parts of the region, but would need to be confirmed over a longer timeframe. Sampling bias could also explain part of the difference in observed values.

3.5 Response capacity

Market capacity is strongest for imported rice. Four of every five of traders claim that they are able to restock imported rice within a week. Fewer than three of five can do the same for local rice. In fact, local rice is absent from many markets during the dry season, which indicates that beyond a few surplus areas, the capacity of markets to respond to increased demand for local rice is highly seasonal. The gari market chain seems to be fairly responsive, with short response times reported in the main markets of Sierra Leone.

Storage capacities have increased compared to five years ago for two thirds of the surveyed markets, offering another indication of market development and a sign of investment by government and private traders. However, traders face significant constraints to responding to additional demand, an issue with implications for potential cash transfer programs and procurement activities.

Table 1: Main constraints faced by traders

| Difficulty 1 | Difficulty 2 | Difficulty 3 |
|---------------------|--------------------------|---------------------|
| Poor transportation | Lack of access to credit | Low demand |

Source: key informant interviews

The first constraint mentioned by traders is poor transportation – bad roads, high transport costs and inadequate transport services. Poor transportation limits traders’ ability to resupply. It is interesting to note that for a place like Kailahun, the price of transportation to Kenema increases by a third during the rainy season. Transit time by truck increases from a day in the dry season to 3 days or more in the rainy season, severely limiting market access during the lean season, the time of year when household food security indicators are weakest. The 2007 LMR reports a similar pattern in south eastern Liberia.

Poor access to credit, the second most common constraint, limits traders’ ability to transact in higher volumes, store and secure supplies in advance. Traders are largely self-financed. ‘Susu’ group savings schemes are also mentioned as a source of finance. Lack of credit implies lesser ability to adapt to changes in demand, and a higher cost of doing business. The third constraint identified by traders is low consumer demand. This is a reminder that although markets have recovered since the conflict, low household purchasing power is a limit to their expansion. The limited capacity of local market chains and traders’ operational difficulties are risks that should be taken into account in the design of food security interventions in Liberia and Sierra Leone.

Market Performance: key points

- ✓ High degree of concentration in the interdependent imported rice and cocoa market chains.
- ✓ A buoyant market for palm oil, cocoa is supporting producer incomes and food access
- ✓ The local rice market chain is much weaker than the imported rice market chain
- ✓ Incomplete degree of market integration. Integration weaker than elsewhere in the region?
- ✓ Volatile exchange rates influence the direction of cross-border trade flows
- ✓ Market response capacity suffers from poor transportation, lack of credit and low demand.

4. Cross-border trade and food security

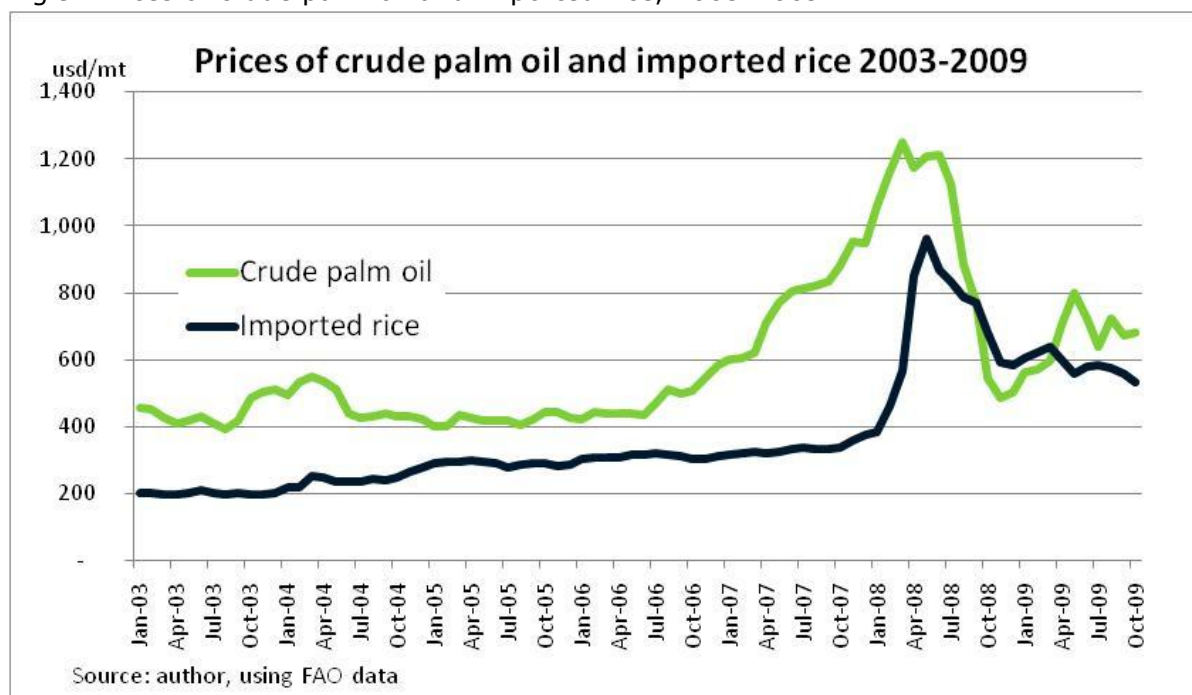
The trade flow mapping exercise and the assessment of market conduct show that the market system links producers to consumers. This section links these trends to household food security opportunities and their implications for food security programming.

4.1 Producers

The West African palm oil trade supports producer household's food security. The 2006 CFSNS estimated that some 14 percent of Liberian households belong to the palm oil producer group. An additional 8 percent combined palm oil production and food crop production. The 2007 VAM study ranks palm oil production as the second or third income source in rural areas in Sierra Leone. Palm oil is largely a smallholder crop that offers attractive household processing possibilities, bolstering incomes and food security. According to Tailliez (2007), 80 percent of Guinea's palm oil production is artisanal. Women's central role in the palm oil market can be assumed to support household food security. Indeed, women commonly process palm kernels and sell palm oil. Women manage income from palm oil sales, commonly to buy food on the market during the dry season. In addition, it is noted in Liberia that the youth commonly gather wild palm oil bunches and sell them to women processors. Palm bunch gathering is an attractive activity for youth in rural areas. It is known from the 2006 Liberia CFSNS that palm oil production was one of the very first activities undertaken by returnees: it requires little capital and is therefore accessible to the poorest.

In recent years, palm oil to rice terms of trade have been strong and have favored palm oil producers. Fig. 9 demonstrates that international palm oil prices rose in tandem with rice prices during the increase in commodity prices in 2008. As the study of the impact of high food prices in Liberia demonstrates, palm oil producing households were, by and large, able to defend their food access thanks to high palm oil prices. International prices for palm oil remain above their historical average, constituting a viable livelihood opportunity for producer households.

Fig 9: Prices of crude palm oil and imported rice, 2003-2009



Favorable palm oil market conditions supported household food security opportunities. The Liberia CFSNS (2006, p47) identified palm oil producers as the livelihood group with the highest prevalence of food insecurity in the country (20% 'severe', 44% 'borderline'). At the time, 14 percent of households belonged to the 'palm oil' producing livelihood group, and a further 8 percent to the 'palm oil and food crop' livelihood group. Interestingly, the 2009 Liberia Food Security and Nutrition Survey (LFSNS) reveals that the 'palm oil' livelihood group as such no longer existed, as palm oil production has become an element of the more diverse rural livelihoods that have developed in the post-conflict period. The buoyant palm oil market can be assumed to have played a role in this process. According to the LFSNS, two thirds of Liberian households produce cash crops.

Producers are benefiting from favorable palm oil prices. During its heyday – before the period of instability in Guinea that began with the 2007 strikes – Diabé would handle close to 6 million liters of palm oil every year. That has substantially declined, and has coincided with a decline of household food security status in Forest Guinea (CILSS *et al.* 2010). The 2009 qualitative survey carried out in Sierra Leone also identifies market links with neighboring Guinea as an important factor for household food security.

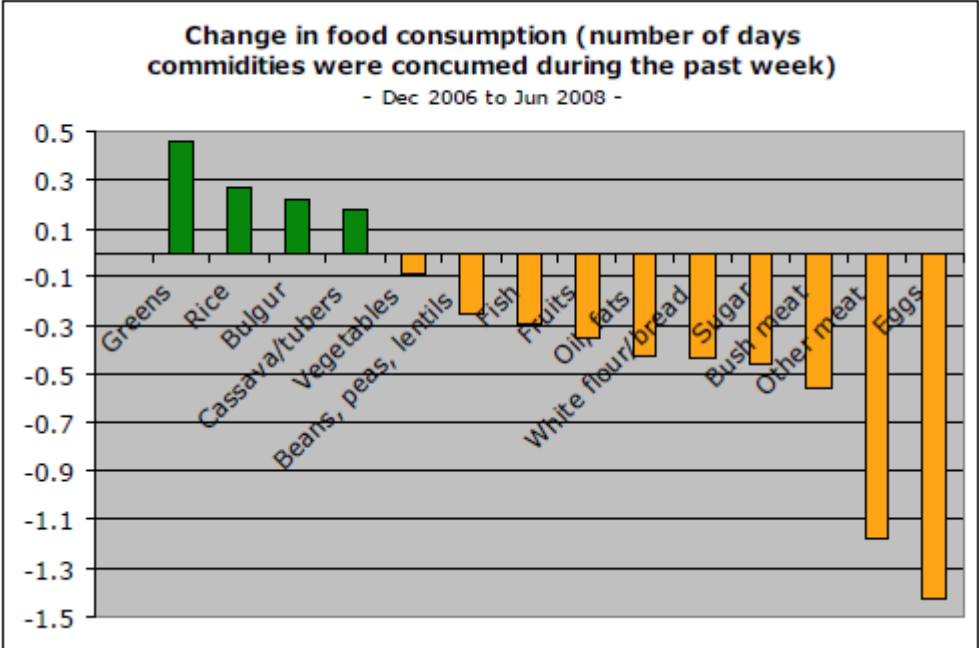
The CFSNS estimates that 32 percent of rural Liberian households cultivate cocoa (although only 6% of households are classified as 'pure' cash croppers). Tree crop farming is the second most important source of income for rural Sierra Leonean households (following food crop production) – indicating that the cocoa trade is relevant to household income at the national level. As explained in section 3, the market chains for cocoa and imported rice are tightly interwoven: cocoa buyers are also sellers of imported rice, cocoa producers are rice buyers. Cash or in-kind advances during the lean season allow producers to access imported rice during the lean season. This system is advantageous to the producer when the cocoa market is buoyant, as it has been in

recent years. According to the data from the Sierra Leone price database, cocoa/rice terms of trade in Kailahun in February 2010 were 39 percent better than a year earlier, reflecting the improvement in producer food access. However, it leaves the undiversified producer at a disadvantage when cocoa prices decline.

4.2 Consumers

The gari market chain in Sierra Leone is assessed to be fairly responsive to changes in demand: as such, it represents a viable substitution mechanism for households faced with a higher price of rice since 2008. Substitution to gari was mentioned as a widely-adopted coping strategy in the assessment of the impact of high food prices carried out in both Liberia (Liberia, 2008) and Sierra Leone (WFP, 2008). The graph below shows that households in Monrovia, faced with the increase in food prices, substituted towards gari at a time when other foods were being removed from the diet. Urban consumers in Freetown and Conakry, faced with the high cost of rice, have substituted to gari. The continued availability of affordable gari supplies will support food access for market-dependent households.

Fig 11: Change in food consumption patterns in Monrovia, Dec 2006 compared to Jun 2008



Source;Liberia,2008 p28

In Liberia, the more remote areas (trading with Côte d’Ivoire for imported rice) are also those with highest rates of food insecure households, as revealed through the 2006 CFSNS and the 2008 LFSNS 2008.

4.3 Implications for food assistance programming and monitoring systems

Some insights obtained through this report could be taken into account in the design of future food assistance interventions in Liberia and Sierra Leone. The report has established that a competitive wholesale market for Sierra Leone’s gari exists, to the point that the country exports thousands of tons of the commodity to Guinea and Liberia every year. Food assistance programs may wish to tap into that trade

to supply direct feeding interventions. As Liberia and Sierra Leone consider the future of their food assistance programs, the feasibility of integrating gari among the commodities that are distributed to beneficiaries should be assessed (implying investigation of local procurement and fortification possibilities).

The palm oil market's performance influences the food security of vulnerable rural households. A disruption in the global or regional market could affect the livelihood strategies for palm oil smallholders. Palm oil/rice terms of trade and the performance of the regional palm oil market should be explicitly monitored to deliver early warning of a possible shock to the palm oil livelihood. For cocoa and coffee producers, rice/cocoa terms of trade are a relevant indicator of livelihood performance.

Generally, Liberia and Sierra Leone maintain trading links with Guinea and Côte d'Ivoire that influence food security - Guinea as a market for palm oil and gari, Côte d'Ivoire as a supplier of imported rice for the Liberian south east. Changes in the political, security or economic environment of these countries could affect cross-border trade and the food security of vulnerable groups in Liberia and Sierra Leone. Exchange rates in Guinea and Côte d'Ivoire influence trade.

This report has identified markets of regional significance to monitor. It is recommended that market information systems in Liberia and Sierra Leone integrate these markets in their reporting to improve the analysis of food security.

Table 2: markets of regional significance for cross-border trade in Liberia and Sierra Leone

| Market | Relevance |
|------------------------------------|---|
| Guéckédou, Guinea | Cocoa, coffee and palm oil wholesale |
| Diaobé, Sénégal | Palm oil wholesale market |
| Kailahun, Sierra Leone | Supply for tree crop producers |
| Pleebo, Liberia | Entry point for imported rice from Côte d'Ivoire |
| Barmoi, Sierra Leone | Major local rice, gari, palm oil source for Conakry and Freetown. Main groundnut source for Freetown. |
| Séguéla, Côte d'Ivoire | Supplies Liberia with groundnuts, pulses |
| Dove Court (Freetown) Sierra Leone | Leading consumer market in Freetown |
| Red Light (Monrovia), Liberia | Leading consumer market in Monrovia |
| Ganta, Liberia | Palm oil wholesale market |

Crossborder trade and food security

- ✓ The cross-border cash crop trade bolsters household food security in Sierra Leone and Liberia.
- ✓ Sierra Leone gari exports support urban household food access in Monrovia and Conakry.
- ✓ Instability in Guinea, Côte d'Ivoire are risks to food security for Sierra Leone and Liberia. Other risks factors include exchange rate fluctuations, global price fluctuations (e.g. palm oil)

5. Recommendations

The results presented in this report argue for the following recommendations in the areas of food security and market monitoring, local food procurement and food security programming.

Food security and market monitoring

Section two illustrated that the Guinean market offers attractive opportunities for producers in Sierra Leone and Liberia. Côte d'Ivoire is a supply source for chronically food insecure areas of Liberia. As such, it is recommended that food security and market monitoring explicitly take account of these patterns in subsequent reporting.

| Issue | Why |
|--|---|
| Explicitly monitor markets in Guinea and Côte d'Ivoire, and relate price levels to those of nearby markets in Sierra Leone (Barmoi, Kailahun) and Liberia (Pleebo) for rice and palm oil | Guinean market performance determines prices for producers in Sierra Leone and Liberia. |
| Continue reporting on palm oil/rice, cocoa/rice terms of trade in Liberia and Sierra Leone. | These are relevant food access indicators. |
| Monitor exchange rates between the Liberian Dollar and the CFA Franc especially during the lean season. | Determines whether traders will ensure the import of rice from Côte d'Ivoire to south east Liberia. |
| Monitor other exchange rates | Influences cash crop flows and prices |

Procurement recommendations

Section two of cross-border trade flows suggests further analysis take place on procurement opportunities in Sierra Leone.

| Issue | Why |
|--|---|
| Assess the feasibility of gari procurement in Sierra Leone | Market capacity for gari in Sierra Leone seems robust. |
| Understand the role of Guinean demand for Sierra Leone's local parboiled rice. | Trading links with Guinea can influence the viability of P4P activities. |
| Monitor prices and volumes in the P4P targeted area of Foya (Liberia), as increasing local rice production might create an incentive for cross-border trade. | Context of high Guinean demand, perhaps the natural market for Lofa Country rice. |

Programmatic recommendations

Section four determined that sales of commonly exported cash crops constitute important income sources for vulnerable groups. Food security programs in Liberia and Sierra Leone may wish to support household-level food processing activities, which seem to have potential in an expanding regional market.

| Issue | Advantage |
|--|--|
| Promote food processing techniques for palm oil, gari through food/cash-for-training. | Diversification, increase in producer household incomes. |
| Proceed incrementally in the expansion of cash programming in rural areas, in light of the weaker performance of markets and to the weaker capacity of traders in such areas Seasonal factors should be given due consideration. | A incremental, learning approach will minimize risk. Conditions are favorable for cash programming in the central belt of Liberia, where markets are fairly functional |

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Annex I Correlation coefficients for imported rice

Table 3: Correlation coefficients. Retail prices of imported rice in Liberia.
Jan 2009 to March 2010

| | Bo-Water Side | Buchanan | Foya | Gbarnga | Pleebo | Red Light | Saclepea | Tubmanburg | Voinjama |
|---------------|---------------|----------|-------|---------|--------|-----------|----------|------------|----------|
| Bo-Water Side | | | | | | | | | |
| Buchanan | 0.59 | | | | | | | | |
| Foya | 0.63 | 0.03 | | | | | | | |
| Gbarnga | 0.51 | 0.87 | -0.46 | | | | | | |
| Pleebo | 0.50 | 0.07 | 0.81 | -0.03 | | | | | |
| Red Light | 0.50 | 0.83 | -0.51 | 0.94 | -0.12 | | | | |
| Saclepea | 0.64 | 0.73 | 0.27 | 0.60 | -0.12 | 0.61 | | | |
| Tubmanburg | 0.62 | 0.86 | 0.60 | 0.67 | 0.41 | 0.66 | 0.69 | | |
| Voinjama | 0.73 | 0.40 | 0.96 | 0.04 | 0.33 | 0.02 | 0.48 | 0.62 | |
| Zwedru | 0.73 | 0.67 | 0.44 | 0.41 | 0.16 | 0.34 | 0.73 | 0.62 | 0.67 |

Source: authors' calculation, using LMIS data

Average = 0.46

Table 4: Correlation coefficients. Retail prices of imported rice in Sierra Leone.
Jan 2009 to March 2010

| | Barmoi | Bo | Dove Court | Kailahun | Kenema | Lumley | Makeni | Port Loko |
|------------|--------|-------|------------|----------|--------|--------|--------|-----------|
| Barmoi | | | | | | | | |
| Bo | 0.29 | | | | | | | |
| Dove Court | 0.37 | 0.16 | | | | | | |
| Kailahun | 0.64 | 0.21 | 0.29 | | | | | |
| Kenema | 0.48 | 0.91 | 0.30 | 0.22 | | | | |
| Lumley | 0.22 | 0.18 | 0.90 | 0.26 | 0.20 | | | |
| Makeni | 0.44 | 0.73 | 0.49 | 0.35 | 0.65 | 0.45 | | |
| Port Loko | 0.92 | 0.30 | 0.15 | 0.56 | 0.47 | -0.05 | 0.31 | |
| Wellington | 0.06 | -0.05 | 0.86 | 0.17 | -0.03 | 0.95 | 0.37 | -0.63 |

Source: authors' calculation, using WFP Sierra Leone data

Average = 0.36