Cross-border Trade and Food Security in West Africa

The Western Basin : Gambia, Guinea, Guinea-Bissau, Mali, Mauritania, Senegal

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Acronyms

ACA : African Cashew Alliance
AFD : Agence Française pour le Développement
CFSVA : Comprehensive Food Security and Vulnerability Assessment
ECOWAS : Economic Community of West African States
CILSS : Permanent Inter State Committee Against Drought in the Sahel
CIRAD: International Agronomic Research Center for Development
CNC : National Cashew Commission
CNDD : National Council for Democracy and Development
CSA : Food Security Commission
FAO : Food and Agriculture Organization
FOB: Free on board
FAOSTAT: Food and Agriculture Organization Statistics
FCFA: Franc de la Communauté Financière d'Afrique
FEWS NET: Famine Early Warning Systems Network
GOANA : Great Offensive for Agriculture, Food and Abundance
GDP : Gross Domestic Product
INSAH: Sahel Institute (CILSS)
K2M : Katsina – Kano - Maradi
MIS : Market Information System
MADR : Ministry of Agriculture and Rural Development
OECD : Organisation pour la Coopération Economique et le Développement
OMA : Observatory of Agricultural Markets
OPA : Observatory of Abnormal Practices
SWAC: Sahel and West Africa Club.
USAID: United States Agency for International Development
USD: United States Dollar
WAMIS NET: West Africa Market Information Systems Network
WFP : World Food Programme

Preface

At a meeting in Lomé in 1989, food security experts from CILSS member countries defined the limits of West Africa's main trading basins. The western basin, the central basin and the eastern basin constitute trading systems that foster opportunities for the region's food security.

In 2008, the western basin – covering an area from Mauritania to Liberia, through Senegal, the Gambia, Guinea-Bissau, Guinea and Sierra Leone – experienced a shock that compromised the flow of imported rice on which national markets have become dependent. This disruption to markets led to short and medium term policy responses to mitigate the impact on vulnerable groups, and to reduce countries' dependency on food imports.

Knowledge of food trade flows, trader incentives and capacity is required to inform food policy responses. The western basin is a system in flux, facing continued instability on the international commodity markets on the one hand, while being blessed with strong agricultural potential on the other. The existence of such high stakes justifies an in-depth assessment of the system's performance and its influence of household food security. .

The present study is a joint effort on the part of CILSS, FAO, FEWS NET, WFP and member countries. The document offers an analysis of trade dynamics and food security in the western basin. We hope that decision makers at both the national and regional level may find herein information of use to the implementation of food security programs.

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Executive Summary

The western basin – defined for the purposes of this study as the market system linking Gambia, Guinea, Guinea-Bissau, Senegal, western Mali and Mauritania – hosts a variety long-distance trade flows that support the livelihoods and coping strategies of households vulnerable to food insecurity. These cross-border flows respond to strong demand emanating from the coast's urban areas, with the Dakar-Touba area. When trade flows occur freely, the palm oil, livestock, cashew nut and groundnut businesses constitute opportunities for households in the basin to ensure their food security and cope with food crises.

The commercial system's structure offers opportunities and constraints to food security. The western basin's markets are concentrated, potentially penalizing producers and consumers alike. Sectors that are closely linked to the world market – such as imported rice and cashew nuts – are dominated by a handful of actors. The widespread influence of commercial networks in the wholesale trade is a sign of restrictive entry in that market segment. However, strong social links between retailers and consumers favor food security: retailer's widespread practice of sales on credit allows households to defend their food access at times of crisis. Markets have the demonstrated ability to respond to additional demand, especially for imported commodities. The markets of Dakar, Touba (Senegal) and Basse Santa Su (Gambia) are 'leading' markets in the basin. Kaolack (Senegal) is the leading market for millet. The markets in the basin's hinterland – and in Guinea – are less integrated with those at the heart of the western basin.

Economic and political shocks that the basin has experienced since 2007 have influenced its capacity to support household food security. The increase in commodity prices and the global economic crisis that followed have reduced transacted volumes, shrunk traders' margins and have reinforced the concentrated nature of wholesale trade. The crisis in Guinea, by disrupting cross-border food trade, has weakened the food security of the forest area's cash crop producers. . The improvement in grain availability in the basin compared to 2007 –especially for local rice – bears witness to the system's dynamic nature, and to the existence of new opportunities for household food security. Clearly, public actions influence the performance of the market system, with evident consequences on food security.

The study has identified a series of indicators to monitor in view of identifying risks to household food security. Specifically, economic trends in Senegal – whose demand lies at the heart of cross-border trade in the western basin - and exchange rate variations will be monitored closely. The present study also advocates for an improvement of national and regional information systems, a prerequisite for efficient public action.

Chapter 1. Background and Objectives

1.1 Background

Previous studies have demonstrated that cross-border trade plays a determining role in food security in West Africa. The shocks that regional markets have experienced in past years – the Niger food crisis in 2005, the increase in food prices in 2007/2008, the global crisis in 2009 – have led authorities to improve their understanding of commodity markets, in order to develop the most appropriate responses to the risks to food security that such market disruptions can provoke. Although studies published since 2005 can be said to have constituted solid baseline information on the markets of the eastern basin around Niger (see Aker, 2007), the case of the western basin remains less well known. Illustrating uncertainties on trade flow patterns in the western basin, CILSS, FAO and FEWS NET (2009 p.5) mention 'unquantifiable trade flows' between the southern and northern portions of the area.

Studies on the theme of cross-border commerce have shown that traders implement sub-regional commercial strategies in southern Senegambia (Abdoul et al, 2007). Fanchette (2001) has described the characteristics of cross-border trade in the case of upper Casamance, outlining the role of religious networks, the influence of Gambia's re-export trade and the advantages that Senegal's Diaobé market has reaped from its border location. At present, it would be useful to broaden the geographic scope of such analysis, analyze the price data from national market information systems (MIS's) and obtain information from traders themselves in order to illustrate the role of cross-border trade on household food security in the basin. The present study also builds on the market flow mapping exercises undertaken by CILSS and FEWS NET in Mali and Mauritania.

1.2 Objectives and Partnerships

The overall objective of the study is to provide baseline information on commodity markets and their influence on food security in the western basin. In order to do so, the study offers the following outputs:

- Trade flow maps for commodities for food security;
- Analysis of the performance of the basin's cereal markets ;
- Illustration of the impact of shocks to the trading system.

For the purposes of this study, the western basin is defined as an area including Gambia, Guinea, Guinea-Bissau, the Kayes region of Mali, southwestern Mauritania and Senegal. Other initiatives on cross-border trade in the Mano River Union countries will complement this report for the southern part of the basin.

It is expected that the analysis presented here inform regional food security policies. The recommendations in this report allow the identification of monitoring actions that will favor the integration of cross-border trade dynamics into food security analysis in West Africa. Improved knowledge of the issue and its influence on food security will help decision makers seize emerging opportunities and mitigate potential food crises in the future.

USAID funded the study, which was conducted in support to CILSS's regional market

access program. FAO, FEWS NET, WFP and national market information systems participated in the assessment. The role of each partner in the study is outlined in the table below.

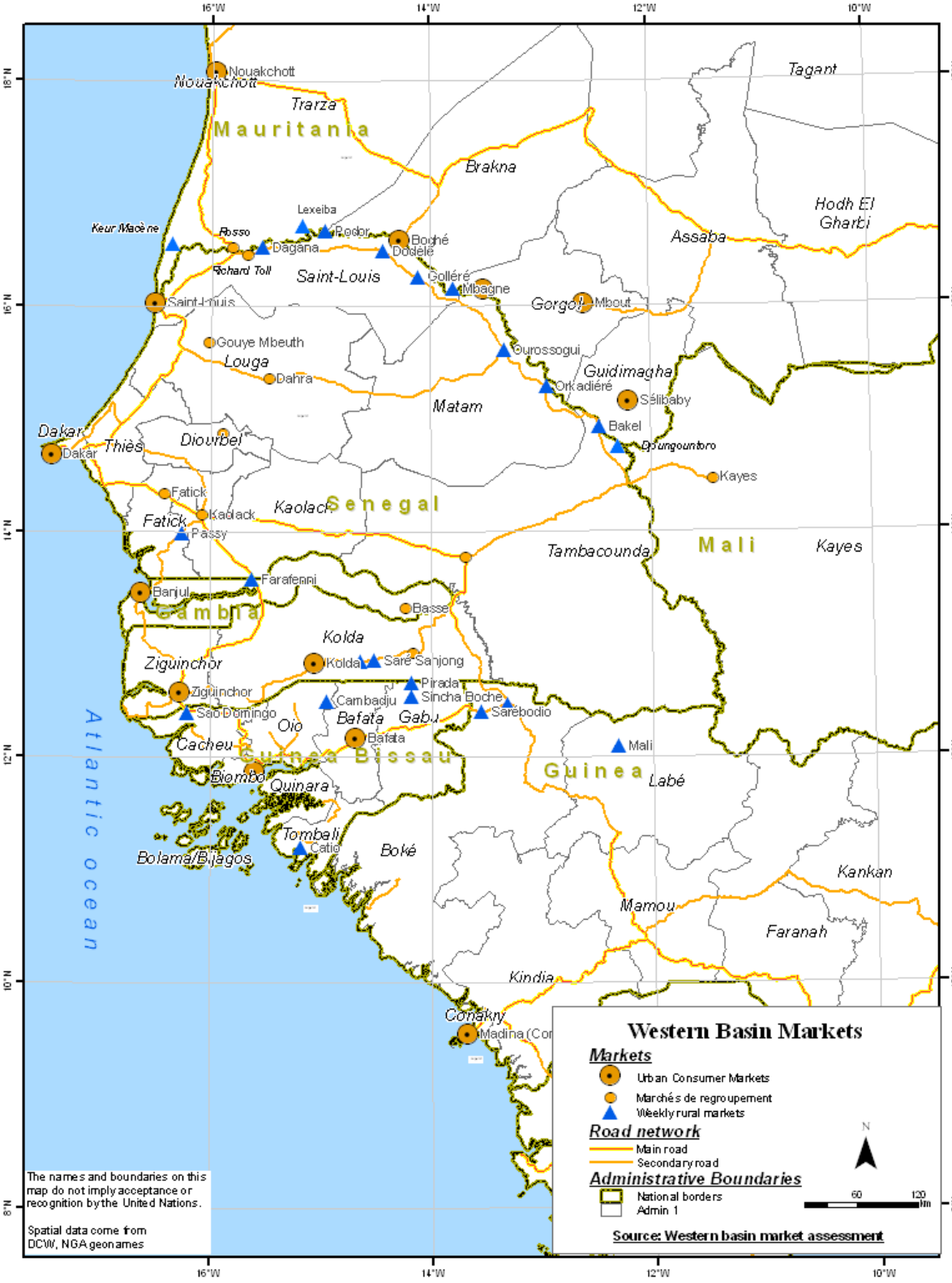
Table 1 : Partnerships

Step	Partners involved
Study design	CILSS, FAO, FEWS NET, WFP
Questionnaire testing	CILSS, FAO, FEWS NET, WFP, MIS
Data collection	CILSS, FAO, FEWS NET, WFP, MIS
Data entry and analysis	WFP
Secondary data	CILSS, FAO, MIS

1.3 Methodology

The study is based on primary and secondary data. Price data was obtained from the Agricultural Marketing Agency in Guinea, FEWS NET, the Senegal MIS, the Agricultural Market Observatory in Mali, the Food Security Observatory in Mauritania, and WFP for Guinea-Bissau. Production and trade numbers we acquired from CILSS, national Ministries of Agriculture and FAO. As other studies have mentioned (SWAC, 2008) data on livestock trade are scarce and, at times, contradictory.

Map 1 : sampled markets



Primary data collection relied on the trader survey guidance published by WFP in September 2009 (WFP, 2009a). Primary data was collected on markets through focus

group discussions and interviews with traders themselves. Data collection tools included a market questionnaire, a trader questionnaire and an interview guide for discussions with importers. Markets were selected on the basis of results from the livelihood zoning exercise carried out for the Senegal Comprehensive Food Security and Vulnerability Analysis (CFSVA), the list of markets monitored by national MIS's, and by consulting key informants. Map 1 shows the location of the markets visited for primary data collection. The list of markets is provided in an annex to this report. In each market a focus group discussion was held with experienced traders or key informants who were deemed knowledgeable of the local market. Information was collected from individual traders. A trader questionnaire was administered to randomly selected wholesalers, collectors, and retailers on each market. Finally, semi-structured interviews took place with importers in national capitals. The table below shows the number of questionnaires that were completed in the field.

Table 2 : Primary data collection tools

Data collection tool	Number	Objective (total)	Achieved (total)
Market questionnaires	1 par marché	45	45
Trader questionnaires	5 per commodity per market	Between 400 et 600	403
Interviews with importers	2 ou 3 par pays	12	12

Questionnaires were tested on 13 and 14 November 2009 on Tilène market in Dakar. Data collection took place from 14 November to 12 December 2009. The period coincided with the very active livestock marketing period prior to the Tabaski holiday. The coarse grain marketing season was also underway. For crops that were out of season, traders were asked about the most recent marketing period. For example, the information collected on cashew nuts pertained to the cashew marketing season that took place in the second quarter of 2009. Data entry took place in Dakar in December 2009, the data was analyzed using SPSS. Price data analysis was carried out using Eviews.

1.4 Limitations

The adopted approach took account of operational constraints. Firstly, due to the lack of information on markets and trade in the western basin, the selection of markets was purposive. The approach implies that results from primary data collection be interpreted as illustrative information. Results from primary data analysis were considered in association with those available from secondary data and key informants. The opinion in this report relies on the convergence of evidence from these various sources.

The scope of the study was purposefully limited to the commodities thought to be most important for food security. Other products, such as fish, onions, and tamarind were not analyzed. The trade in these commodities could be analyzed in further studies.

At times, it was difficult to meet with importers : some have no physical address and are weary of surveys, especially since the rise in food prices in 2008. In markets, individual traders were generally available to answer the trader questionnaire. However some traders may have may have given biased responses. The questionnaire included a question that attempted to ascertain margins, a secret that traders were reluctant to share. In order to obtain an adequate response rate, the question was at the end of the questionnaire, after a bond of trust had been established with the trader.

Data collection in Guinea took place at a time of insecurity and high uncertainty, as the teams were in the field when the assassination attempt on the president of the military junta took place on 3 December 2009. Due to Guinea's specific context, primary data collection took place with looser supervision arrangements than in other countries. Close attention was given to enumerator selection in Guinea to allow the team to operate on its own, while ensuring quality data collection.

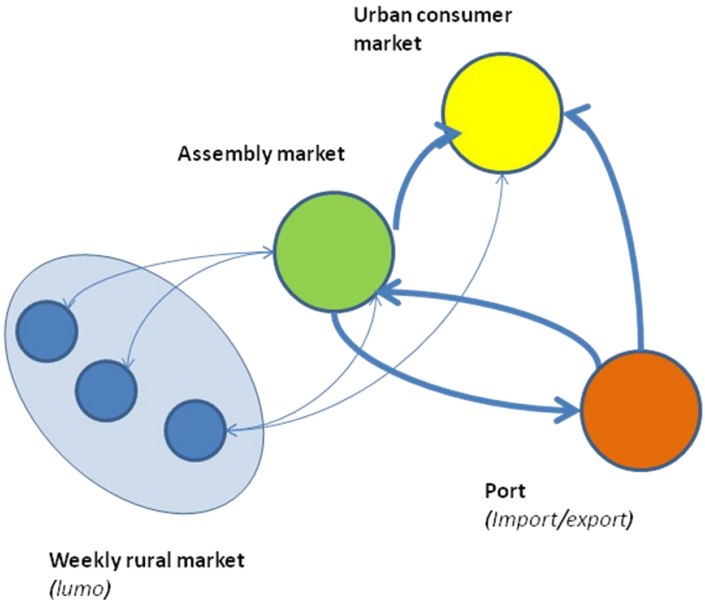
Finally, the study did not cover Liberia or Sierra Leone, although both countries are part of the western basin. It will, however, be possible to integrate them into the analysis in the future, once FEWS NET's remote monitoring activities are underway in both countries, in collaboration with CILSS and WFP.

Chapter 2 : Market Characteristics and Trade Flows

This chapter outlines the general characteristics of the western basin's trading system, in order to set the stage for further analysis later in this document. The chapter opens by categorizing the main types of markets in the basin. Then, major market flows of rice, coarse grains, millet, livestock, cashew, palm oil and cowpeas are mapped out.

2.1 Market typology

Figure 1: simplified typology of the western basin's markets



Three main types of markets exist in the western basin, each hosting specific modes of exchange. The weekly rural market, or *lumo*, the assembly market and the urban consumer market have specific and well defined roles in the system (Figure 1).

In rural areas, most exchanges take place on weekly markets where unprocessed commodities are traded against manufactured goods. The *lumos* of a specific local area coordinate their schedules, each holding its market day in turn. These weekly rural markets operate in relationship with an assembly market. These assembly markets, which host transactions between wholesalers, function as an interface with the port (and the international market) and urban consumer markets. The urban consumer market receives supplies from the assembly markets for local goods, and from the port for imported commodities.

Figure 1 outlines the links between these types of markets. Some markets will combine functions, for example assembly and supply to urban consumers. As Fanchette (2001) describes, the trading network is in constant flux: some markets will grow in a very short period of time (such as Diaobé assembly market, created in 1974), while other vanish (such as Salikénié and Temento *lumos* in upper Casamance).

2.1.1 Weekly rural markets

Weekly rural markets - also called *lumos* in Gambia, Guinea, Guinea-Bissau, in the river valley in Mauritania and in Senegal –are at the start of the market chain for local commodities (millet, sorghum, maize, groundnuts). The purpose of these weekly markets is to concentrate supply and demand in order to reach a critical mass that can trigger trading activities. After independence, national authorities favored the creation of new *lumos* to serve as trading hubs in cash crop-producing areas and to limit trade flows to

neighboring countries (Fanchette 2001). The creation of rural municipalities in Senegal in the 1970s also contributed to the increase in the number of weekly rural markets. Taxes on these markets constitute a financial lifeline for the new municipal authorities.

The weekly rural market is both a producer and a consumer market. During the harvest, the market's role is to collect locally-produced cereals and cash crops, and to sell imported or manufactured goods to households. During the lean season, the *lumo* will adapt to function as a supply source for cereals. The weekly rural markets located in surplus producing areas can function as producer markets year-round, supplying assembly markets as well as weekly rural markets located in deficit areas (Figure 1).

Mobile traders, who operate in the weekly markets of a given area, are the main actors on *lumos*. These mobile traders ensure the collection and dispatch of local products as well as the supply of in imported and manufactured goods. Mobile traders operate in liaison with a nearby assembly market where traders restock and pass on goods collected on the weekly rural markets. Sellers on weekly rural markets include producers and retailers. Buyers are consumers or collectors.

The product range on offer on weekly rural markets is generally limited and includes substandard quality items, whose presence underscores the weakness and price-sensitivity of rural consumer demand. Some weekly rural markets are very recent – only a few years old. The typical *lumo* is small, hosting some 50 traders on average. The weekly rural market is underequipped, frequently lacking a hall or storage facilities. A quarter of *lumos* is cut off from main roads during the rainy season. This occurs during the lean season, and can only exacerbate rural household's seasonal food access problems.

Cross-border trade flows will flow through *lumos*, such as Saré Yoba Diega (Kolda) for the export of cattle to the Gambia, or Cambadju (Bafata) for the export of millet and groundnuts to Senegal. On both banks of the Senegal River, rural markets coexist with shops, whose presence allows a continuous trade in imported goods and cash crops.

2.1.2. Asssembly markets

Assembly markets are the interface between weekly rural markets, urban consumer markets and the international market. Although assembly markets commonly have a peak in activity once a week, transactions take place every day on such markets. Assembly markets constitute bulk loads of unprocessed goods (grain, cash crops) from the supplies received from neighboring *lumos*. These bulk consignments are dispatched to urban consumer markets and to the port for export goods (groundnuts, cashew nuts). Assembly markets also channel imported goods received from the port to weekly rural markets. During the lean season, assembly markets will make local and imported cereals available to weekly rural markets in food deficit areas.

Trades on assembly markets take place between sellers who are producers or collectors, and buyers who are wholesalers or dispatchers. The mobile traders who underpin the weekly rural markets are buyers and sellers on nearby assembly markets. These mobile traders embody the link between *lumos* and assembly markets. Although the largest volumes of exchange in assembly markets takes place between wholesalers, all assembly

markets also host an active retail trade. On average, some thirty wholesalers are present on each assembly market.

Assembly markets are specialized by commodity : Dahra (Louga) for cattle, Richard Toll (Saint Louis) for local rice, Gouille Mbeuth (Louga) for cowpeas and Touba (Diourbel) for groundnuts. Assembly markets also tend to appear near a border: the market in Diaobé (Velingara) owes its existence to its status as a subregional trade hub, where Bissau-Guinean Gambian and Guinean traders travel to trade with their Senegalese counterparts. The market in Rosso (Trarza) has the same role in Mauritania. Basse Santa Su (Upper River), an 'entrepôt town' (Fanchette, 2001) is another assembly market whose location and infrastructure enable sustained trade with neighboring Senegal.

Box 1 : Touba and Diaobé, key markets of the western basin

Touba, the holy city of the *mouride* religious brotherhood, was founded a century ago in the northern groundnut basin of Senegal. The annual *magal* pilgrimage, drawing thousands of participants, takes place in Touba. With some 500,000 inhabitants, Touba is one of Senegal's most populous cities. The market in Touba hosts wholesale transactions on imported rice from Dakar port. The market also handles a bulk trade in groundnuts, palm oil and other forest products to meet its own demand as well as that of the cities of northwestern Senegal.

Diaobé is located in Senegalese territory, a short distance from Gambia and Guinea-Bissau and within reach of Guinea. Diaobé is a sub-regional market where Bissau-Guinean, Gambian, Guinean and Senegalese traders meet. High volumes are transacted for palm oil, green coffee, black pepper and *néré* from the forest. Groundnuts from the Gambia, Guinea Bissau and upper Casamance are sold in bulk. From Diaobé, dried fish and salt from Senegal find their way to markets in the south.

Assembly markets generally benefit from adequate road access and storage facilities. Nonetheless, a third of these assembly markets is cut off during the rainy season, implying that transactions are irregular, with knock-on effects throughout the market chain.

2.1.3 Urban consumer market

Urban consumer markets meet urban areas' demand through supplies brought in from the port or from assembly markets. These are 'permanent' markets where high volumes are exchanged daily. Wholesalers and retailers are active for a wide range of food products on such markets. Urban consumer markets can accommodate hundreds of retailers. Supply on these markets is abundant and diversified, due to consumer's relatively high purchasing power and the large volumes that are traded.

Supply and demand are especially diversified on the markets of capital cities that have a seaport and a sizeable demographic weight (Banjul, Bissau, Conakry, Dakar, Nouakchott). Consumer markets of a smaller size exist in food deficit rural areas, such as Mbout (Gorgol), Ziguinchor or Bakel (Tabacounda). Although these markets function as collection markets for a short time at the harvest, their main role is to meet consumer demand.

Imported goods are found year round on urban consumer markets. These markets are generally endowed with good infrastructure. Some urban consumer markets away from sealed roads have access difficulties during the rainy season.

The western basin's commercial system relies on a multitude of rural weekly markets, of modest size, who are linked to an assembly market. These assembly markets are linked to all other markets, including urban consumer markets and importers/exporters at the port. The table below outlines the main characteristics of the basin's main market types.

Table 3 : Functions and characteristics of market types in the western basin

Market type	Fonction	Characteristics
Weekly rural market (*lumo*)	Collecting production (harvest) Meeting consumer demand (lean season)	Active once a week. Presence of mobile traders. Few traders, weak demand, low product quality.
Assembly market	Wholesale trade	Weekly frequency. Specialization of markets by commodity (for example, Dahra for cattle)
Urban consumer market	Meeting consumer demand (year round)	High volumes, diversified supply

2.2 Trade flow mapping

Generally, commodity flows in the basin converge towards coastal urban areas, in response to their strong demand. The urbanization of the Western Basin (described in Abdoul et al, 2007) constitutes a long-term structural trend that trade flows are responding to. Moreover, coastal urban areas, with seaports, are an in permanent contact with the global market. They are arrival and departure points for imported or exported commodities.

The Dakar-Diaobé-Touba triangle is the backbone of the agricultural commodity trade in the western basin. Indeed, food flows in the basin converge towards North West Senegal, a highly urbanized area whose strong demand influences distant markets in neighboring countries.

Table 4 below illustrates the demographic and economic factors that explain Senegal's strong influence on the basin. It shows that the gross domestic product (GDP) per capita in Senegal in 2007 is well above that of neighboring countries. Senegal's GDP per capita of USD 908 in 2007 is nearly four times that of Guinea-Bissau, and twice that of Guinea. It also shows that the population of Dakar, estimated at some 2.6 million inhabitants, is also well above that of other cities in the basin. The concentration of solvent consumer demand in northwestern Senegal explains the areas influence on regional trade flows.

Table 4 : GDP per capita et and population of the capital city

Country	GDP *per capita* in USD (2007)	Capital city's population (2007)
Gambia	$357	Banjul, 0.4 million
Guinea	$451	Conakry, 1..4 million
Guinea-Bissau	$210	Bissau, 0.3 million
Mali	$554	Bamako, 1.5 million
Mauritania	$874	Nouakchott, 0.7 million
Senegal	$908	Dakar, 2.6 million

Source : United Nations (2010a)

The market in Touba, the nerve center for Senegal's commodity trade, imports food and cash crop commodities in bulk from all origins, and dispatches them to the urban areas of Dakar, the northern groundnut basin, the Petite Côte and food deficit rural areas. The port of Dakar supplies the rest of Senegal, Mali and Guinea-Bissau in imported rice and manufactured goods.

Diaobé market functions as gateway to the Senegalese market for Bissau-Guinean, Gambian and Guinean trade intended for the urban areas of North West Senegal. Foreign traders do not have direct access to the heart of the basin in Dakar and Touba. Although trade flows take place across very long distances – as in the case of tropical products (palm oil, coffee, pepper) or for livestock – Senegalese traders assume ownership of the goods in border markets such as Diaobé. The market in Dahra assumes the same function for cattle imported to Senegal. The assembly markets of Rosso in Mauritania, or Kayes in Mali, similarly allows merchandise to be passed on between traders of different nationalities.

Before presenting trade flow maps, mention must be made of the western basin's high dependency on cereal imports. With the exception of Mali, all countries considered in this study have high, chronic cereal deficits. For years, countries of the western basin became increasingly dependent on supplies of cheap rice bought on the international market, imported through the ports of Nouakchott, Dakar, Banjul, Bissau and Conakry.

This document presents maps of trade flows for selected commodities, namely rice, coarse grains, cashew nuts, groundnuts, cattle, palm oil and cowpeas. The performance of specific market chains are further debated in Chapter 3.

2.2.1 Local and imported rice

The western basin has resorted to massive imports of rice, in a context of low local grain production. Although cross-border trade in rice exists, their volume is limited. Rice flows within the western basin largely occur within national borders.

The main production basins for local rice in the western basin are located in the Senegal River valley and in the mangrove, lowland and upland systems of the basins' southern half (Gambia, Casamance, Guinea and Guinea-Bissau). The rice production of the Office du Niger in Mali – which is part of the central basin – are not taken into account in this analysis. Although local rice production has undoubtedly increased sharply in many countries following the increase of its price in 2008 (AFD 2009), it remains insufficient to meet an ever-increasing demand. In Senegal, the market of Richard Toll concentrates a large part of local rice supply. Rosso in Mauritania, Catio (Tombali) in Guinea-Bissau and Nzérékoré in Guinea assume this role in their respective countries. Local rice production is largely auto-consumed by producer households in Casamance, in the Gambia and in Guinea-Bissau. By contrast, parboiled rice produced in Guinea is traded nationally. DYNAFIV (2005) estimates that some 120,000 tons of parboiled rice are marketed each year, of which half is traded between prefectures. In Senegal, local rice is from the Senegal River valley is transferred to the regions of Thiès, Diourbel and Tambacounda. Small quantities of local rice are traded on border markets, such as in the case of local Senegalese rice in Mauritania.

In the case of the two Guineas, it is noted that women are very involved in the marketing of local rice. They purchase parboiled rice from cooperatives in rural areas and sell it to consumers in weekly rural markets as well as in urban consumer markets.

As a consequence of weak local rice production, the western basin relies on imports for rice supplies, especially in the lean season. The main imported rice flows are identified in map 2 below. Rice imported into the basin is of Asian and south American origin. Table 5 illustrates the size of imports and their contribution to overall cereal needs for the western basin countries.

Table5 : Rice imports and their contribution to cereal needs

Country	Cereal consumption needs (average 2003-2007, tons)	Rice imports (average 2003-2007, tons)	Contribution of rice imports to total cereal needs (average 2003-2007)
Gambia	278,000	83,584	30%
Guinea	Appx. 2,000,000	218,143	Appx 10%
Guinea-Bissau	188,000	57,254	30%
Mali	2,658,000	177,202	7%
Mauritania	465,000	46,525	10%
Senegal	1,889,000	869,421	46%

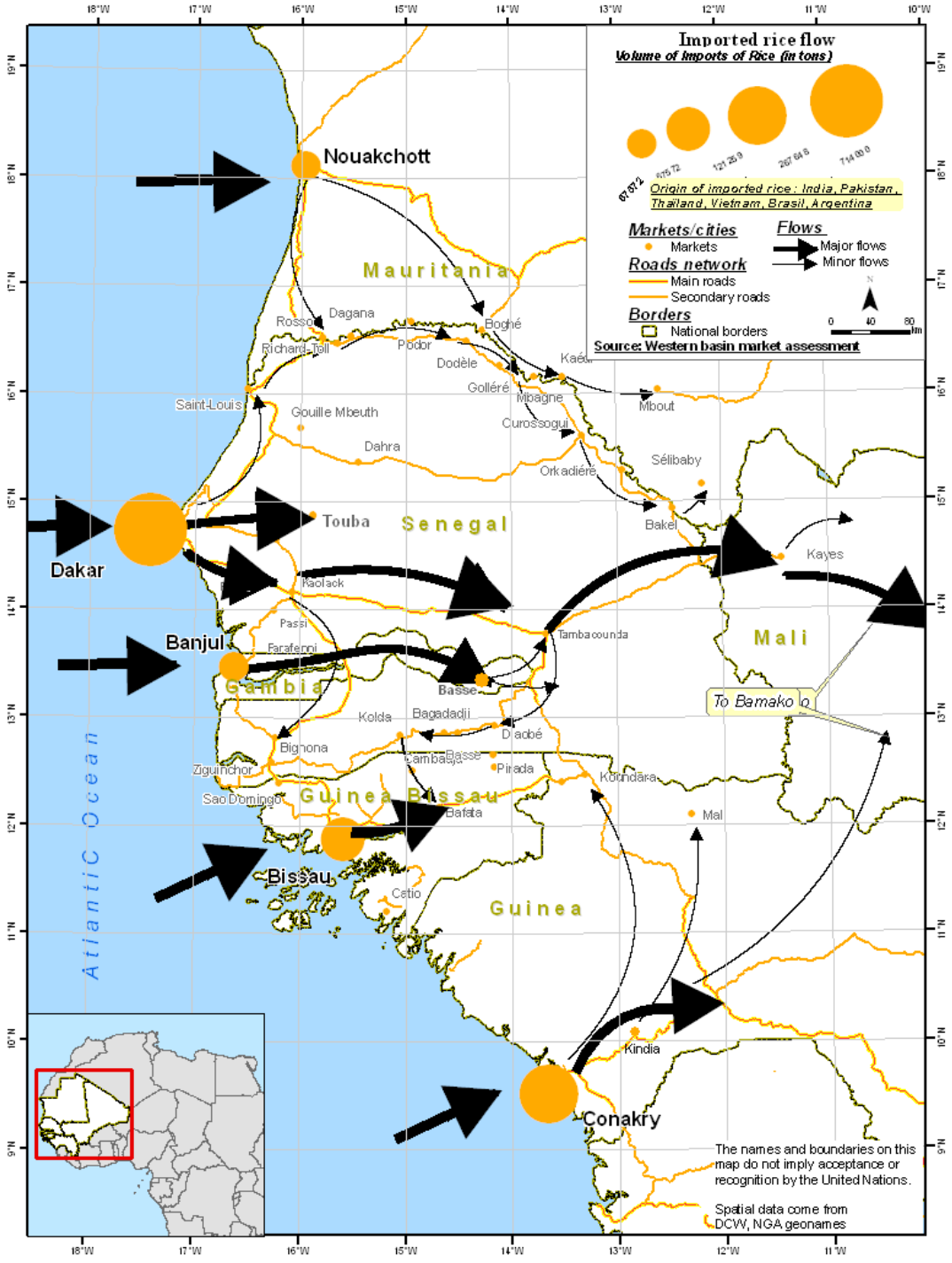
Source : FAO STAT, CILSS (2009).

According to CILSS, the western basin imported over 1.2 million tons of rice. The western basin represents 4% of the international rice trade, estimated at some 30.4 million tons in 2009 (CIRAD, 2009). In absolute terms, the main importers are Senegal, followed by Guinea and Guinea-Bissau. In relative terms, Senegal, Gambia and Guinea-Bissau

depend on rice the most to cover their grain needs: imported rice accounts for 30% to 46% of cereal needs in these countries. Guinea, Mali and Mauritania are less dependent on the imported rice market. Given imported rice's importance in overall food supply, governments pay close attention to the trade. Authorities will often regulate its price and attempt to limit re-exports.

As shown on map 2, the port of Dakar is the main entry point for imported rice in the western basin. The port also supplies Mali, and, at times, Guinea-Bissau. T

Map 2 : Imported rice trade flow



During the lean season – and after the cashew season – Senegalese traders will dispatch imported rice supplies to Guinea-Bissau. Senegal is the supplier of last resort for Guinea-Bissau. As a small and isolated market, Guinea-Bissau seems especially vulnerable to a disruption of the international market or to the flow of imported rice coming through Senegal.

Minor cross-border imported rice flows occur on short distances when justified by a price differential, for example between Senegal and Mauritania, or between Gambia and Senegal. Gambia, called an 'entrepôt state' by Fanchette (2001 p91) has a river barge system that allows the dispatch of large quantities imported rice from Banjul to Basse Santa Su. Some of these quantities make their way to Senegal. Abdoul *et al.* (2007) question the sustainability of the Gambian re-export model, due to the macro-economic imbalances it has created. The recent appreciation of the dalasi against the cfa franc since 2006 may be the cause of the lesser competitiveness of Gambian exports to Senegal in more recent years. Most imported rice in Mali comes from Dakar and Conakry ports. The rice imported through Nouakchott and Bissau ports do not seem to be traded across borders in significant quantities.

2.2.2 Coarse grains

Coarse grain production in the western basin does not cover the population's needs, especially in the food deficit areas of the north. Coarse grain production in the basin totals some 2.5 million tons, mainly from Guinea and Senegal (Table 6). Cross-border trade in coarse grains in the basin, illustrated in Map 3, link the groundnut basin in Senegal and Gambia to the cities of northwestern Senegal and the Senegal river valley. Coarse grains from Guinea were exported to Senegal in the past. The instability and insecurity that Guinea has recently experienced appear to have snuffed out this trade. Increasingly, maize originating from northern Côte d'Ivoire, transiting through Mali, compensates for the coarse grain deficit in the basin.

Table 6 : Coarse grain production

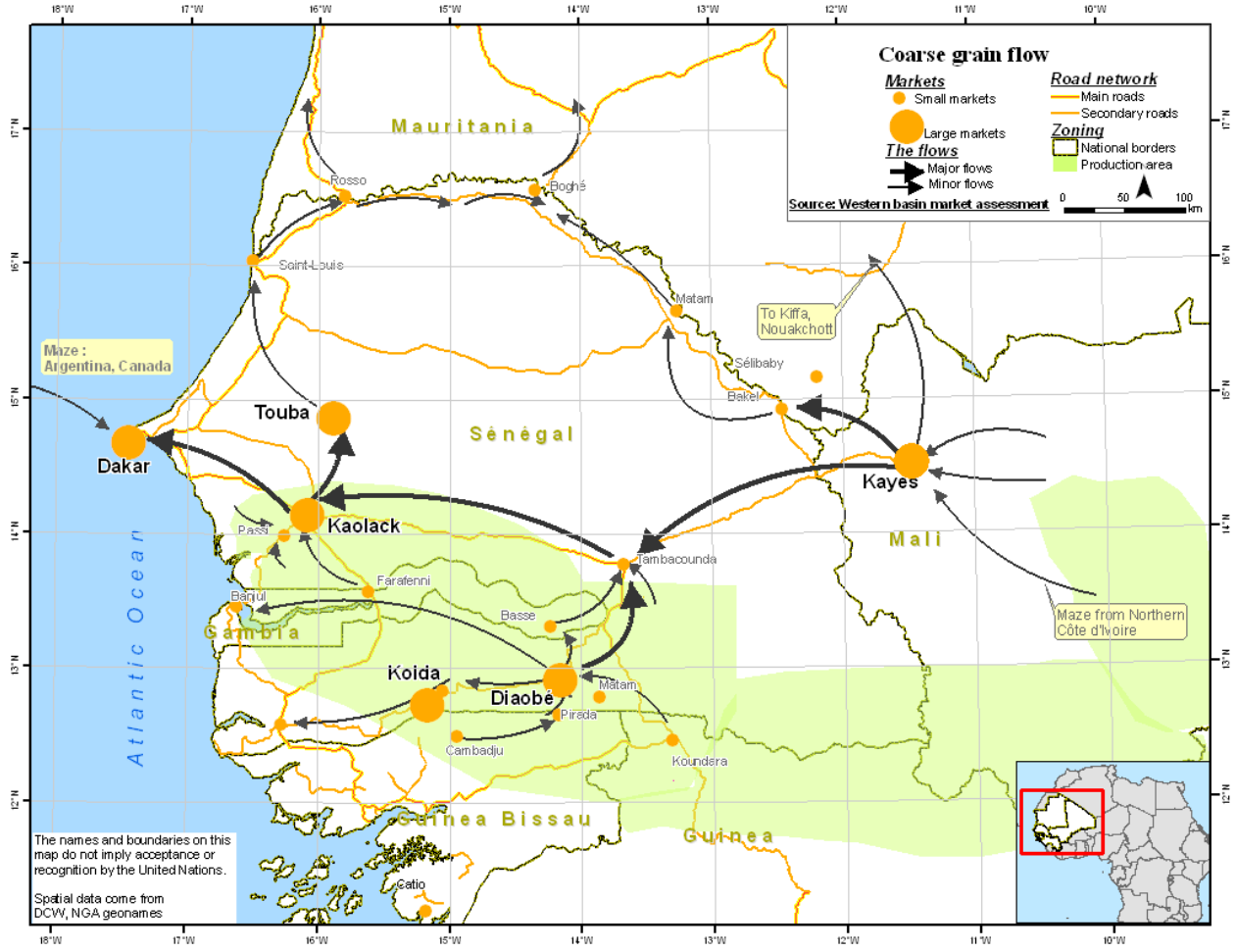
Country	Coarse grain production (average 2004-2008, tons)
Gambia	179,803
Guinea	1,180,906
Guinea-Bissau	88,099
Mali (Kayes)	64,140
Mauritania	88,055
Senegal	925,300

Source : FAOSTAT , Mali Ministry of Agriculture

Millet is produced in all of the basin's countries, from the rainfed production zone of the Senegal river valley to northern Guinea, often in association with groundnuts. The

Senegalese groundnut basin, Gambia, Upper Casamance and northeast Guinea-Bissau produce most of the surpluses that are brought to market. Southern Mauritania, a chronic food deficit area, received millet from the groundnut basin and from Mali. As is the case for other cereal crops in the basin, local millet supply is insufficient to cover demand. Households will switch to other cereals during the lean season.

Map 3 : Coarse grain trade flows



Local and imported maize

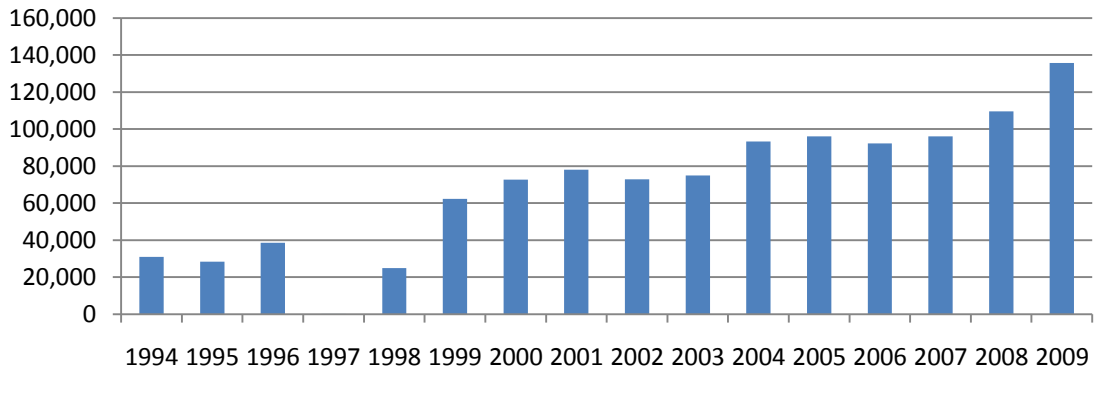
As with millet, the local maize consumed in the western basin is mainly produced in the groundnut basin (including Gambia) and western Mali. Southern Mauritania imports maize through Mali. Maize production in the basin is insufficient to cover demand, which triggers maize imports from overseas. Maize imports from Argentina and Canada will materialize on markets during the lean season, including in maize-producing areas such as the groundut basin, Upper Casamance and the region of Tambacounda. In August 2009, FEWS NET reported that maize imported from overseas was being sold on the Senegalese market of Bakel, on the border with Mali. The commodity is meant for industrial users and poultry farming, but also for human consumption. Its low cost compared to other local coarse grains and its high quality imply that maize from overseas is a rising competitor for local maize, especially in areas close to seaports from where maize from overseas enters the market.

FEWS NET has reported that Ivorian maize increasingly contributes to grain supply in food deficit areas of the western Sahel. Improvements in road links between western Mali, southern Mauritania and eastern Senegal in the past decade has allowed the basin to benefit from significant supplies of maize from northern Côte d'Ivoire. Moreover, households are increasingly substituting to maize, often the cheapest grain on the market. These trends have turned maize into the swing commodity in the western basin's grain market.

2.2.3 Cashew

In the western basin, the cashew sector became increasingly important in the 1980s, and experienced a boom in the past two decades. The main cashew production zone includes the Sine-Saloum in Senegal, Gambia, Casamance, Guinea-Bissau and areas of Guinea bordering Guinea-Bissau. Guinea-Bissau is the main cashew nut producer in the basin, followed by Senegal, Guinea and the Gambia. As the crop is produced by smallholder farmers and matures just before the annual lean season, income from cashew nuts considerably contributes to household food security (MADR et al., 2007) Together, the countries of the basin export some 190,000 tons of cashew nuts every year during a marketing season that lasts from April to June. Cashew nuts from the basin are exported *in natura* to the port of Kochi, in India. As indicated in Figure 2, cashew nut exports are increasing rapidly, having doubled in Guinea-Bissau between 1999 and 2009.

Figure 2: Cashew nut exports from Guinea-Bissau, 1994-2009
Source: CNC (2009)



In the cashew market, cross-border flows take place in view of the competitiveness of the seaports from where the commodity is exported (Map 4). Indeed, most of Senegal's cashew nut production – estimated at some 30,000 tons – is exported through the Gambian port of Banjul. Gambian production, estimated at some 3,000 tons in 2008 (ACA, 2010) represents 8% of total quantities exported through Banjul. According to key informants, the port in Dakar has become less competitive in the past decade. Cashew traders in Senegal complained about high costs and excessive red tape in Dakar, and prefer to route exports through Banjul, seen as the more effective port. Banjul port is also located near the Senegalese cashew producing areas of the Sine-Saloum and Kolda.

Table 7: Cashew nut exports

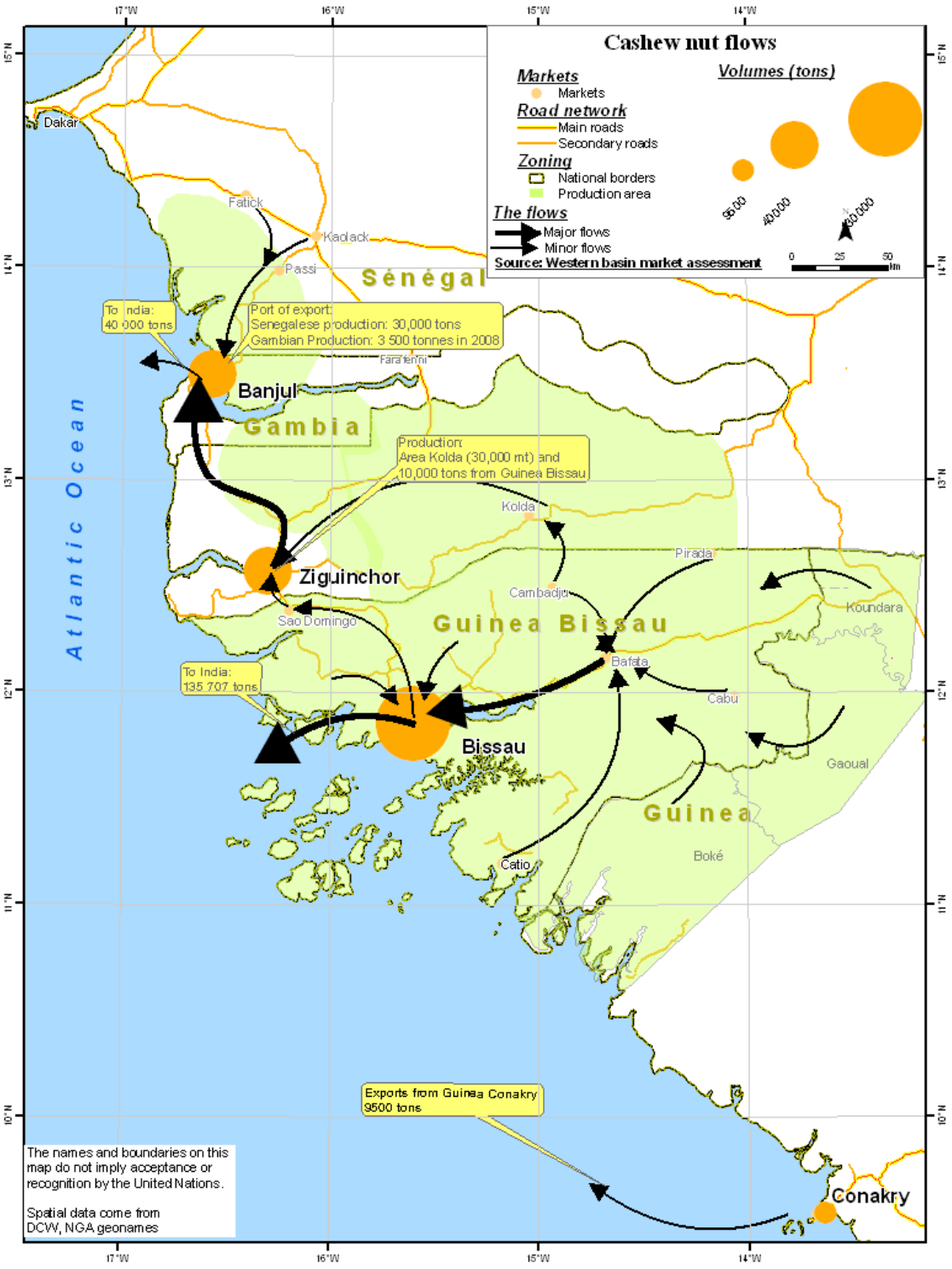
Country	Exports (tons) 2009
Gambia	3,500
Guinea-Bissau	135,707
Guinea	9,500
Senegal	2,169

Sources : ACA, FAOSTAT, CNC, PAM

Moreover, part of Guinea-Bissau's cashew production transits through Ziguinchor *en route* to Banjul. Key informants estimate that some 10,000 tons of cashew nuts are exported from Guinea-Bissau by land using this route every year. The flow is comprised of multiple small loads in order to avoid detection by Bissau-Guinean customs. Indeed, authorities in Guinea-Bissau actively promote the export of cashew nuts through Bissau port in order to assess an export tax, which accounts for 17% of the state revenue (Republic of Guinea-Bissau, 2009). It seems that this policy is successful as the quantity of cashew nuts exported through Senegal is equivalent to 7% of national production. The numbers quoted above are the mission's best estimate, but remain approximate. It is noted that the National Cashew Commission (CNC) estimates that between 40,000 and 50,000 tons of raw cashew nuts are exported from Guinea-Bissau by land to Senegal and then to the Gambia. These numbers appear high, as they do not seem to take account of the fact that nearly all of Senegal's cashew nut production is exported through the Gambia. The Gambia's high cashew nuts export volumes are not entirely composed of irregular Bissau-Guinean re-exports.

Finally, informants report that the Gaol, Koundara and Boké districts in Guinea export cashew nuts to neighboring Guinea-Bissau.

Map 4 : Cashew nut trade flow



Although cashew nut volumes exiting Guinea-Bissau to be re-exported through the Gambia might seem small at present, use of the route is likely to increase in the future, as the port of Bissau faces tremendous operational difficulties linked to low investment. All of the cashew nut exporters met in Bissau explained that the high cost and poor quality of services at the port was a major constraint to their business. The continuous

increase in areas planted in cashew trees, evaluated at 4% per year (Republic of Guinea-Bissau, 2009) implies that export quantities will continue to increase in coming years. In the future, traders face will be tempted to increasingly use the Ziguinchor-Banjul route to dispatch cashew consignments, should Bissau port become saturated.

According to the survey carried out by MADR, FAO and WFP in 2007 on the cashew market chain in Guinea-Bissau, 80% of the rural population derives income from the cashew business. Smallholders producing some 600kg of nuts per year account for the bulk of cashew produced in the country. Guinea-Bissau's cashew boom taken place at the expense of local rice production, leading households to depend on imported rice supplies. For rural Bissau-Guinean populations, food access largely relies on the terms of trade between the commodities on the international market.

2.2.4 Palm oil

Cross-border trade in palm oil allows a long-distance transfer of surpluses from the forest to the high consumer demand emanating from Touba market (Map 5). In the western basin, palm oil production takes place in Senegal, in the Gambia, in Guinea-Bissau and in Guinea. Guinean production, estimated at some 50,000 tons, dwarfs that of other countries (Table 8). According to DYNAFIV (2008), Guinea annually exports some 9,000 tons of palm oil, mainly to Senegal, the Gambia and Mali. The quality of Guinean palm oil supply is reputed to be very variable, a weakness which makes Guinean production vulnerable to competition from Côte d'Ivoire.

Tableau 8: Palm oil production

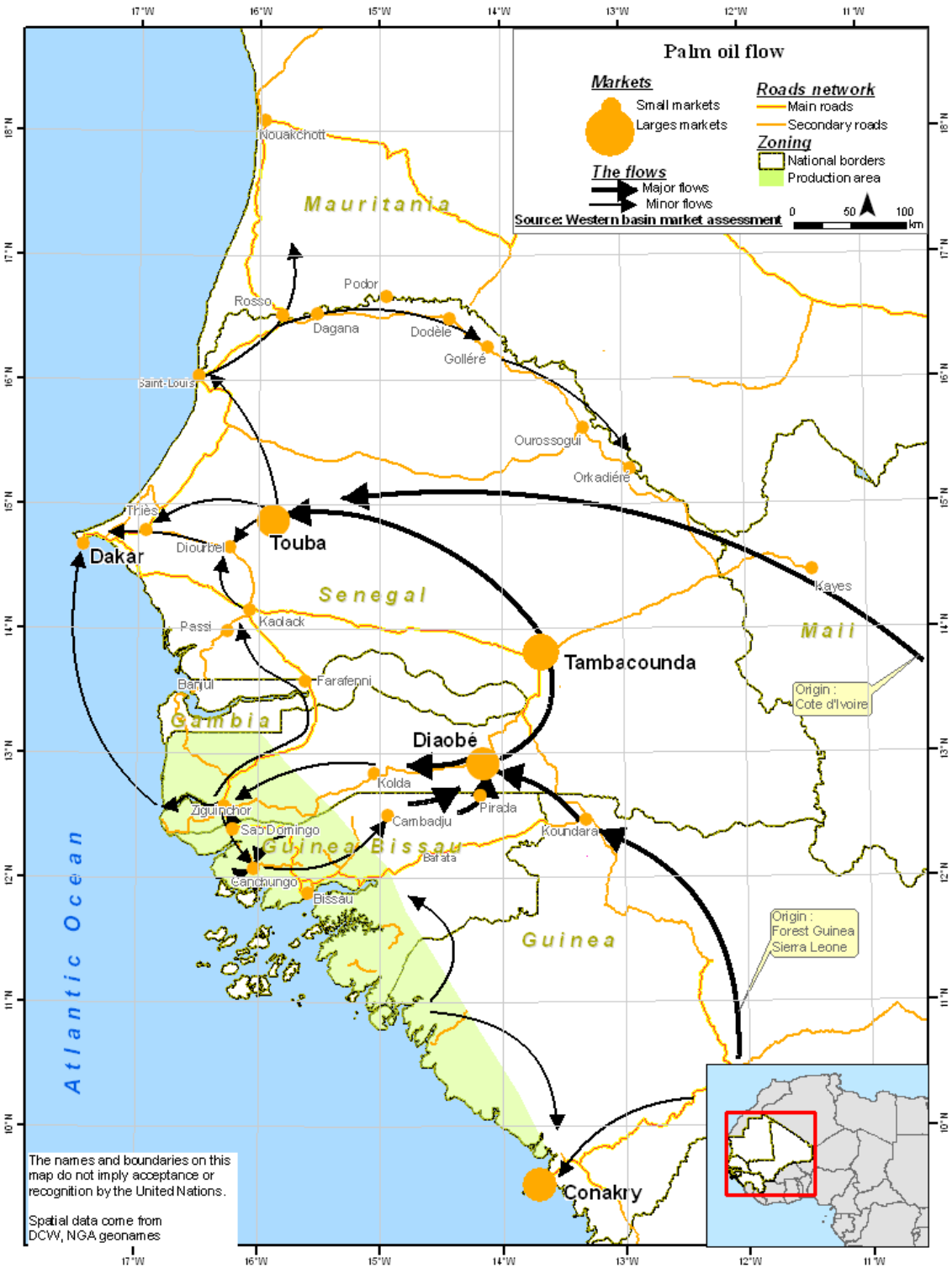
Country	Production (average 2004-2008, tons)
Gambia	2.510
Guinea	50.000
Guinea-Bissau	6.347
Senegal	6.040

Source : FAOSTAT

The palm oil surpluses brought to the market in the western basin mainly come from Forest Guinea (Macenta, Nzérékoré and Yomou), Lower Guinea and to a lesser extent coastal districts of Guinea-Bissau (Cacheu and Biombo). It is also likely that palm oil from Sierra Leone enters the sub-regional trade, as market monitoring in Sierra Leone confirms the presence of palm oil traders from Guinea on national markets (WFP, 2009b).

The palm oil trade from the forest transits through Diaobé market, where goods are transferred from Guinean to Senegalese traders. In 2006, Diaobé handled some 5 million liters of palm oil, according to the Water and Forestry Department. This number is certainly underestimated, as it does not include smaller consignments. Other sources estimate that some 80,000 liters of palm oil are traded every week in Diaobé (Abdoul *et al.* 2007). A smaller, more seasonal palm oil flow reached Diaobé and Ziguinchor from nigheboring Guinea-Bissau. From Diaobé, palm oil is dispatched to Touba, from where it is passed on to consumers. Diaobé also sends palm oil to the Gambia and Casamance.

Carte 5 : Palm oil and tropical product flows



Guinea is not alone in seeking to meet urban demand for palm oil and tropical products. Traders in Diaobé note that Malian traders with contacts both in Touba and in production areas in Côte d'Ivoire have set up a rival route. This alternative route might increase its market share should the sociopolitical environment in Guinea remain uncertain.

In Guinea, 80% of palm oil is produced using traditional, labor intensive processes (DYNAFIV, 2008). Women are the main producers of palm oil, which suggests the activity is important for household income and food security. As gathering palm kernel bunches from wild trees requires little capital, the activity is attractive for deprived households in rural areas. According to the Liberia Comprehensive Food Security and Nutrition Survey, palm oil production was one of the very first income earning activities undertaken by returnees in rural areas after 2003 (Liberia, 2007). The prevalence of food insecurity was high among palm oil producers.

The instability in Guinea since 2007 has seriously disrupted the long distance palm oil trade to the north. Restrictions on food exports and poor security led to a collapse in the palm oil trade between Guinea and Senegal, to the disadvantage of the small scale palm oil producers, some of whom were food insecure to begin with. This issue is explored in more detail in Chapter 4. .

2.2.5 Groundnuts

The groundnut production zone straddles the Senegalese groundnut basin, the Gambia, Casamance, and parts of Guinea-Bissau and Guinea. By far the largest groundnut producer of the western basin (Table 9), Senegal is also the main destination of cross-border trade in the commodity. Groundnuts are sold to agro-industries in western Senegal; as well as to meet household demand. Although a multitude of smallholder farmers produce groundnuts, a few oil processing companies are the main buyers. There is, however, an increase in household groundnut consumption. According to the government of Senegal (2003) two-thirds of marketed groundnuts are sold to the oil processing industry. The balance is sold through 'parallel market chains'.

According to FAOSTAT, Senegal annually exported some 45,000 tons of groundnut oil between 2004 and 2007, mainly to European markets. Smaller amounts of annual groundnut oil exports are noted for Mali (6,900 tons) and Gambia (3,700 tons). Production areas and regional trade flows for groundnuts closely match that of coarse grains presented on Map5. Groundnuts collected in eastern parts of the Gambia, in Guinea-Bissau and in Casamance find their way to Diaobé market, from where the commodity is dispatched to Touba. Production from the groundnut basin and western Gambia flows towards Touba. Groundnuts are also exported to Mauritania through the markets in Rosso, Boghé and Kaédi. Moreover, Mauritania imports large quantities of unshelled groundnuts from western Mali, with Kita district (Kayes) accounting for most of those quantities. The trade is most active during the groundnut marketing season, between the months of November and March

Table 9 : Unshelled groundnut production

Country	Production (average 2004-2008, tons)
Gambia	107,879
Guinea	289,368
Guinea-Bissau	23,272
Mali (Kayes)	94,469
Mauritania	700
Senegal	548,927

Source : FAOSTAT

The groundnut market is seen as a barrier against rural poverty and immigration in the Gambia and Senegal. According to Diop, Behgin and Sewali (2004), the groundnut sector accounts for 60% of rural income and 70% of rural employment in Gambia and Senegal. According to the 1998/1999 agricultural census, and considering the results of the 2002 population census, some 3 to 4 million Senegalese farmers are involved in groundnut production. According to Gueye (2007), the groundnut marketing season is the main economic highlight of the year in rural areas. Groundnuts also offer interesting home processing opportunities. Unfortunately, the groundnut sector is mired in a chronic crisis in Senegal. Gueye claims that Senegalese groundnut production is 4% of world production, against 10% thirty years ago. Volumes collected through licensed channels have dropped by a factor of four since the 1960s. Delays in payments to groundnut producers have been reported since 2001. A marketing channel driven by intermediaries who buy unshelled groundnuts directly from farmer at low prices has emerged. Marketing problems or a delay in payments to producers from the oil companies has immediate consequences on economic activity and household food security. In Gambia, where groundnuts are the main cash crop in the country, farmers will not hesitate to sell their crop in Senegal when prices there are attractive. (IRIN, 2009). .

Groundnut's influence on food security is felt well beyond the groundnut basin. In its reporting on food security in Mauritania, FEWS NET (2001, 2003) establishes a link between the performance of the groundnut marketing season in Senegal and the size of coarse grain flows sent from the groundnut basin to the markets of the Senegal river valley in Mauritania. Indeed, when the groundnut marketing season is unsatisfactory, Senegalese producers will release fewer coarse grains onto the market, limiting supplies available for dispatch to the food-deficit river valley. .

2.2.6 Livestock

Mali is the main cattle source in the basin. Mauritania is the main supplier of sheep and goats (Map 6). Cattle from eastern Mauritania are known to transit through Mali before reaching Senegal, Côte d'Ivoire and Guinea. The OECD (2008) estimates that the livestock sector represents 44% of agricultural GDP in Mali and 80% of agricultural GDP in Mauritania. As demand is concentrated in coastal urban areas (Banjul, Bissau,

Conakry, Dakar, Nouakchott), the livestock trade often takes place across borders. As is the case with other commodities, demand emanating from western Senegal's urban centers attracts long-distance trade flows from neighboring countries. An estimate of annual livestock imports is provided in Table 10 below. Cross-border flows to Senegal mainly reach the markets in Dakar, Touba and Kaolack. National livestock production in Senegal is sufficient to meet the demand of the country's secondary cities, as well as that of the Gambia and Guinea-Bissau. .

According to FAOSTAT, Senegal imported on average some 428,000 heads of small ruminants every year from 2003 to 2007, a trade valued at USD 28.5 million. During the same period, cattle imports reached 10,000 live animals, of a value of USD 6 million. FAOSTAT reports the same number of imported cattle for each year since 2005, which suggests that the numbers should be taken with caution. Guibert et al. (2009 p26) quote from a USAID/ATP study of 2008, which estimates that some 85,000 live cattle were imported to Senegal in 2007. Beyond the debate on the size of the cattle trade, Guinbert *et al.* emphasize the very seasonal character of Senegal's demand for small ruminants. This high seasonal variation in demand limits opportunities for livestock producers.

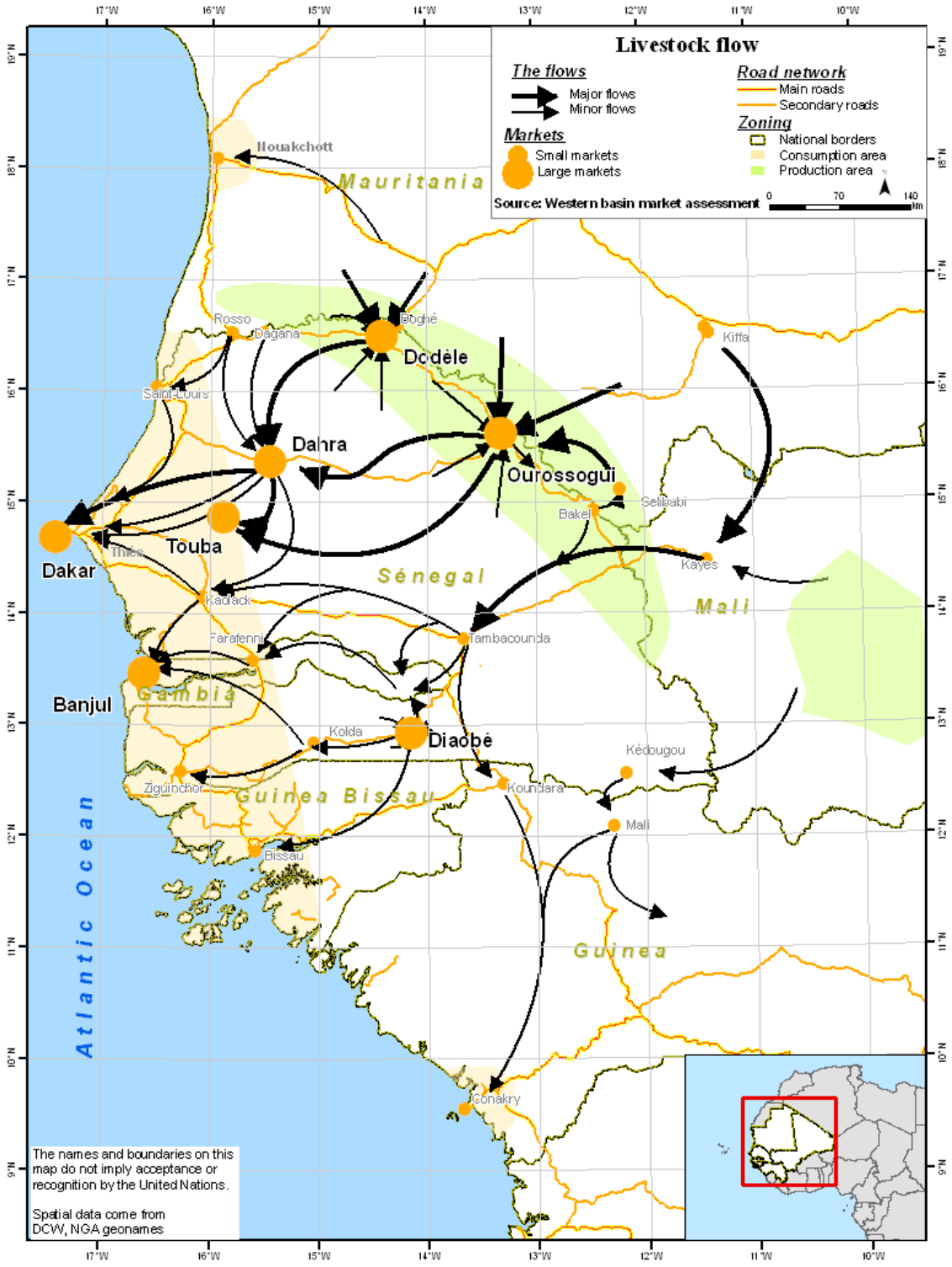
Table 10 : Livestock imports in Senegal (aveage 2003-2007)

	Caprins	Ovins	Bovins
Têtes	196.000	232.000	10.000
Valeur (millions de USD)	15.3	13.1	6.2

Source : FAOSTAT

Mauritanian exports of small ruminants averaged 430,000 per year between 2003 and 2007, a growing trade valued at USD 16 million per year. Sheep account for three quarters of Mauritanian exports. Although it is not possible to provide a breakdown of those exports by destination, it is likely that Senegal receives most of the trade. Livestock trade volume estimates are not available for the Gambia or Guinea-Bissau. The OECD study on livestock in West Africa (2008) identifies the lack of reliable trade data as a constraint limiting meaningful analysis of the sector.

Carte 6 : Livestock trade flow



There are two main routes for livestock trade. On the northern route, Malian and Mauritanian animals are assembled at Dahra market. From Dahra, livestock proceeds to Dakar, Touba and the other urban centers of Western Senegal. On the southern route – of lesser size than the northern channel – livestock from Upper Casamance are gathered

through weekly rural markets. Some of these animals are sent to Diaobé, from where traders take them to Guinea-Bissau's cities. Others animals are taken to Sare Yoba Diega, where cattle are sold to Gambian traders who supply Banjul. It seems that the northern route's relative importance has increased in the past decade: just a few years ago, Upper Casamance sent cattle north to Dakar on a regular basis. It now seems that Malian competition has taken over the market. Mali also exports cattle to Guinea, through the markets in Kedougou, Koundara and Mali-ville.

The ability to sell a goat or a sheep is central to household food security in the Sahel. In the Sahel, households cope with the unexpected (including food crises) by selling an animal. Households in the sahelian zone of Senegal derive most of their income from livestock sales. In August 2008, during the high food price crisis in Senegal, 42% of rural households reported having sold small ruminants, mainly to buy food (WFP, 2008a) Studies based on the household economy approach presented by Save the Children (2009) confirm the strategic place of livestock sales in household income in the Sahel. Households without such income are also the poorest. As such, the cross-border livestock trade can be said to bolster livelihoods and coping strategies in the Sahel.

2.2.7 Cowpeas

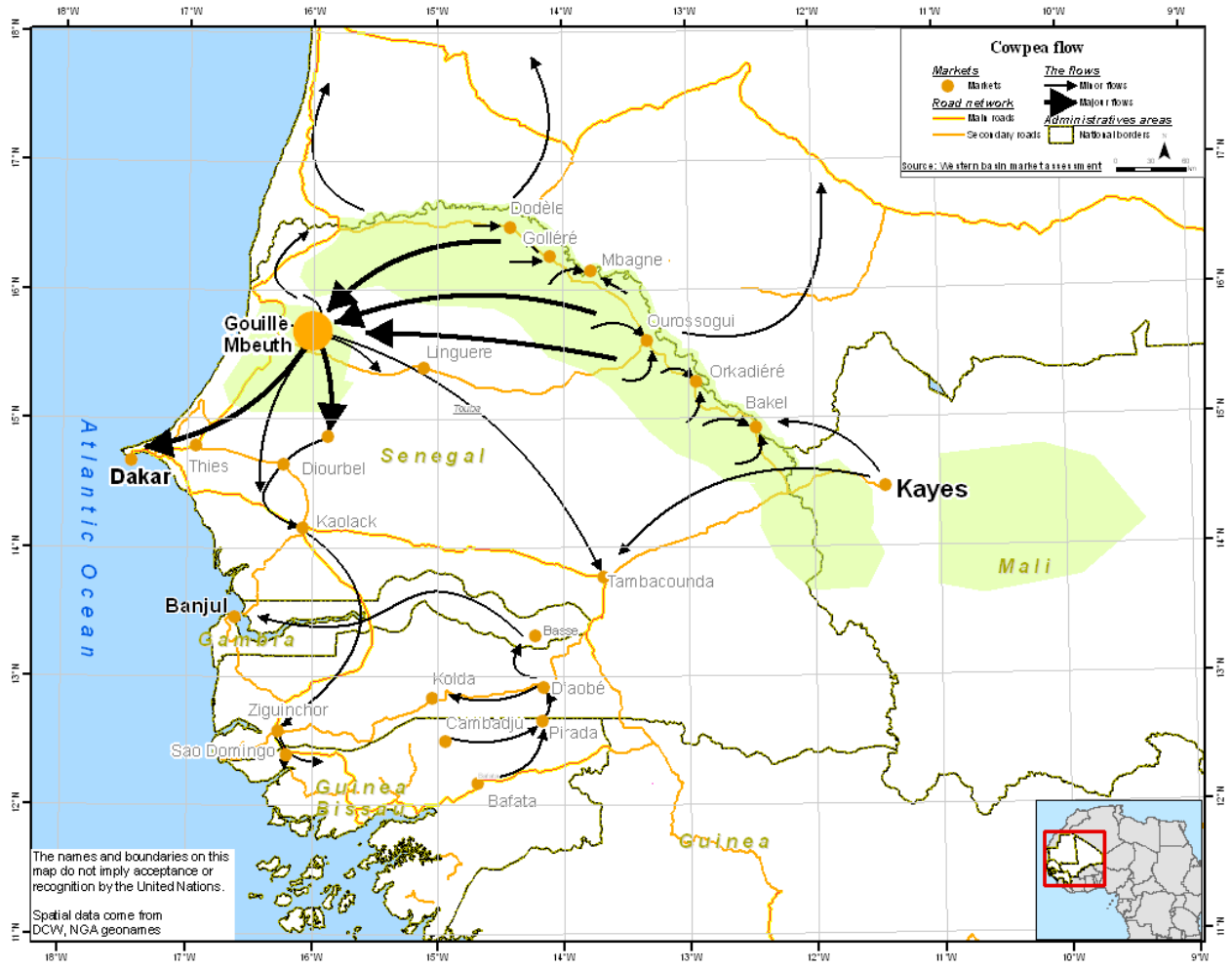
Cowpeas are grown in all agricultural areas of the western basin. Traded surpluses mainly originate in northern Senegal – where the crop competes with groundnuts – in the river valley and in the Louga area. The importance of Senegal in the western basin's cowpea production appears in Table 11. In Senegal, the crop is frequently produced and marketed by women. Gouille Mbeuth assembly market receives cowpea production from the Senegal river valley and the Louga area. The commodity is then sent on to the markets of northern Senegal, where demand is highest. Other more distant areas also receive cowpeas from the same source (Map 7)

Table 11 : Cowpea production

Country	Production (average 2004-2008 in tons)
Guinée-Bissau	211
Mali (Kayes)	3,652
Mauritanie	7,400
Sénégal	67,814

Source FAOSTAT, Mali Ministry of Agriculture

Map 7 : Cowpea trade flow



Cowpeas produced in Guinea-Bissau, which command a quality premium, are exported to Diaobé. Official statistics seem to underestimate Guinea-Bissau's cowpea production, as the country seems to be a source for the Senegalese market. After a poor harvest in 2007, Senegalese traders sourced cowpeas from Guinea-Bissau.

Highlights

- The Western Basin hosts long-distance trade flows that supports incomes and food security for producers.
- The heart of the basin is located in north-west Senegal (Dakar, Petite Côte, Touba), whose where high demand attracts cross-border trade flows.
- Cross-border trade takes place so as to bring supplies to coastal urban areas through intermediary markets, such as Diaobé. The trade in imported rice mainly occurs within national borders.

Chapter 3 : Market Efficiency

The objective of this chapter is to evaluate the efficiency of the western basin commercial system, by describing factors supporting or limiting trade and their influence on food security. The discussion begins by focusing on market structure. The chapter then assesses the practices that are commonly used in transactions. Trader capacity is described. The chapter closes by assessing market integration, offering an analysis of the relationship between the markets of the basin.

3.1 Market structure

3.1.1 Oligopolies in sectors linked to the international market.

The rice import business is highly concentrated, a phenomenon observed in all of the western basin's countries (Table 12). These concentration ratios – which express the total market share of the top 5 importers in each market – are elevated, and reflect the oligopolistic nature of the rice importing activity. Indeed, the concentration ratio varies from 81% (Senegal) to 95% (Guinea-Bissau, Mauritania). All of the countries show 5-firm concentration ratios well above the 60% threshold indicative of an oligopolistic situation.

Table 12 : 5-firm concentration ration for the rice import business in 2008

Country	Concentration ratio
Gambia	90%
Guinea-Bissau	90 to 95%*
Guinea	86%
Mali	85%
Mauritania	90 to 95%*
Senegal	81%

Source : Ministries of Trade. *six firms

Concentration is highest in the Gambia, Guinea-Bissau and Mauritania. In these relatively small markets, 'super importers' with market shares of 25% to 30% are active. The concentration is probably linked to the requirements of international commerce. Access to credit constitutes a barrier to entry for West African traders, who must call on third parties to pay international rice trading companies, who themselves require letters of credit in US dollars (Figure 3). The presence of this additional actor lengthens the market chain and adds an additional margin that is added on to the price of retail rice. A lower degree of concentration – which would be expected to promote competition – is probably not possible without resolving the barrier to entry that access to international finance constitutes.

Figure 3: Imported rice market chain

It appears that the rice import business is becoming more concentrated with time, as the number of active importers is shrinking in Senegal, the main rice import market in the western basin (7 at present, against more than twenty when the business was liberalized in the 1990s) The experience of high food prices in 2008;, which caused financial losses for traders, could yet worsen the trend. According to Neumayer (2009), 6 or 7 importers are active in the Guinean market, which imported over 400,000 tons of rice in 2009 (WFP, 2010a).

Concentration in the rice import sector has an influence on the market, as it allows a few actors to largely determine the availability and price of imported rice, a strategic commodity for the western basin. However, importers' ability to influence prices is constrained by the possibility of competing rice imports from a neighboring country. In the case of the price rise of 2008, the high degree of concentration at the import level, combined with the existence of strong networks in rice distribution and retail, was a factor that may have contributed to the imported rice shortage in Dakar in July 2008 (WFP, 2008). However, the existence of a well-identified group of importers can also allow authorities to regulate the business effectively. In the Gambia, for example, the few rice importers are foreign traders, which allowed the government to negotiate more effectively that if it faced a multitude of traders.

The cashew nut sector is also highly concentrated, Indian exporters are the exclusive exporters of the commodity. The Indian exporters are few, only a dozen operated from Banjul in 2009. In Bissau, only three Indian buyers were active in 2007 (MADR *et al.*, 2007). A large number of cashew producers – accounting for 60% of Guinea-Bissau's rural population – face an oligoposony made up of a handful of exporters. Their strong position allows Indian buyers to influence market conduct and to benefit from considerable bargaining power with collectors and producers (Sarr, 2002). For example,

wholesalers will deal with exporters in US dollar terms, which transfers exchange rate risk to upstream actors of the market chain. The high variability of farm gate cashew nut prices during the 2009 season are attributed to the fluctuations of the US dollar against the CFA franc (CNC, 2009). The mission was told that during the 2009 campaign, cashew nut stocks in Guinea-Bissau went unsold after the depreciation of the dollar against the CFA franc. This example illustrates how the concentration of the cashew sector can undermine producers' interests.

The cashew season is relatively short – from March to July, in the western basin – which implies that traders must have the capacity to mobilize a large amount of resources in a very limited timeframe. The cashew exporting activity therefore favors traders with a robust financial capacity. As with the rice import business, the concentration of the cashew export sector seems to be the inevitable outcome of the activity's inherent financial requirements.

The groundnut sector is also an oligopsony, with a few buyers on the market purchasing from a large number of sellers. The Senegalese state is involved in the marketing of unshelled groundnuts, namely by setting a reference farm gate price. Since the liberalization of the sector and the implementation of a 'factory floor' system meant to allow intermediaries to ensure collection of groundnuts from producers, some 200 private private traders have been certified (Baconnier, 2002). Although this change should in principle increase competitiveness in the groundnut collection activity, at the level of the rural market exchanges remain asymmetrical. Groundnut sellers, pressed for cash to meet urgent household needs, deal with a small number of buyers. The use of payment vouchers *in lieu* of cash and recurrent payment delays demonstrates that market outcomes in the groundnut sector falls short of meeting farmer needs

For local grains, concentration is not as extreme as in the case of the imported rice sector. A dozen grain wholesalers operate at each assembly market. These wholesalers operate within tacitly compartmentalized markets where competition is dormant. A single trader will have tacit 'rights' to collection in a given area, for transactions of a specific commodity, or to supply a given market. In that sense, the relatively high number of grain wholesalers on the basin's assembly markets does not necessarily translate into competitive outcomes.

3.1.2 Commercial networks' influence

As other work has revealed – such as the K2M study (CILSS *et al*, 2006) West African trading networks constitute a mechanism that allows agents to implement international commercial strategies and overcome risks inherent to cross-border trade. Trading networks are a prominent feature of the western basin's trading system. Their existence has a determining impact on entry to the market and price setting.

The *mouride* network – which holds sway over Touba market, the gateway to the urban demand of western Senegal – can be said to enjoy a high degree of influence on Senegalese trade and on agricultural commerce in the western basin. *Mouride* traders are active in the rice distribution business, in the groundnut, cowpea, and palm oil trades. Membership in such networks allows traders to secure access to credit and provides a channel for the acquisition and sale of commodities. In Senegal, the *mouride* network of rice wholesalers wields a high degree of influence on the sector thanks to their domination of the rice distribution business, their capacity to extend credit to other

actors in the market and their access to information (WFP, 2008b). The main Senegalese rice importers are not necessarily members of this network.

In the Gambia, Lebanese wholesalers dominate the rice import trade. Some of these establishments have continuously been in business for decades: the mission met with a trading concern passed on from father to son since the late 19th century. The presence of Lebanese importers is noted in other countries in the region, such as Côte d'Ivoire and Liberia. It could be that some businesses simultaneously operate in different countries. If so, such traders would have the opportunity to coordinate rice import activities at the sub-regional level.

Most palm oil wholesalers and retailers in Senegal are Fulani women of Guinean origin, which confirms the observation of Abdoul et al (2007). Traders of Guinean extraction enjoy a form of social capital that reduces the risk of trading in Guinea. At the time of the survey, when Guinea was experiencing political instability, some of these traders had postponed trips there to re-stock. Traders procure palm oil from their kin in Guinea, thereby shortening the market chain. Through their personal networks, traders of Guinean extraction operating in Senegal are also privy to commercial information, allowing them to adjust their strategy.

For the coarse grain trade, the influence of traders' associations should be mentioned. These associations, whose members often share religious or family ties, can determine access to finance, tax payments, storage and market stalls.

In an operational context notable for its restrictive environment (further explained below), the existence of trading networks is most probably a condition for the market's very existence. Nonetheless, a commercial network's interests are not necessarily aligned with those of consumers and producers, especially at times of crisis.

3.1.3 Barriers to entry

The profile of traders established through the questionnaire suggest that restrictions to market entry exist (Table 13). First of all, more than 9 of 10 traders started their businesses over three years ago. There are very few 'new' traders in the sample. Some 97% of collectors and 98% of retailers have been active for more than three years, which points to the weak attractiveness of the business or to the existence of informal or practical barriers to entry. The average trader is a man of 45 years, with collectors being younger than wholesalers or retailers. There are few young traders: it could be that it takes years of work to constitute the financial and social capital required to become a trader.

As expected, the mission noted that all livestock traders are men, mainly from the Fulani ethnic group. Although women are almost absent from wholesale trading, they are active in the collection and retail activities. Women tend to operate in the palm oil and cowpea trade. The resulting picture – depicting a sector dominated by older men who have been in the business years – bears witness to a lack of flexibility in the renewal of actors. .

Table 13 : Trader profile

Trader Type	Average Age	% youth (<40 years)	% women	+ 3 years in the business
Wholsalers	48 years	12%	4%	91%
Collectors	44 years	13%	22%	97%
Retailers	47 years	11%	14%	98%

Source : trader survey

The ease with which a new actor becomes established varies by market type. As Table 14 shows, more than 80% of key informants consider that it is easy to start a new business on rural weekly markets and on consumer markets, where most trade is retail. By contrast, only 50% consider that it is easy to start a new business in assembly markets, where wholesalers dominate trade. The less open nature of assembly markets may be linked to the strong influence of commercial networks at the wholesale marketing stage.

Table 14: Is it easy to start a new business on this market?

Market type	Yes	No
Weekly rural market	86%	14%
Assembly	50%	50%
Consumer	81%	19%

Source : market questionnaire

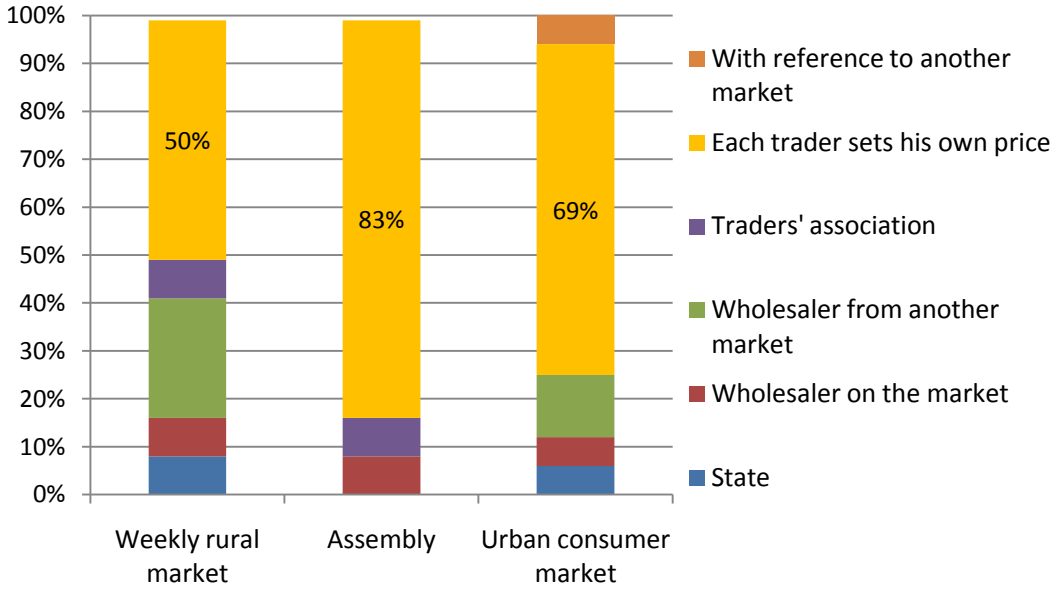
3.2 Market Conduct

In the western basin, market structure is concentrated in sectors linked to global markets. Commercial network's high degree of influence equates to barriers to entry, especially for wholesale trade. This section outlines how this situation influences commercial practices, with specific reference to price setting and credit.

3.2.1 Price setting

Price setting mechanims vary by market type. Overall, assembly markets are subject to very little outside influence in price setting. On 83% of assembly markets, traders set their own prices (Figure 4). Conversely, price setting on weekly rural markets is subject to a higher degree of external influence: on such markets, the individual trader sets his or her own price on only 50% of markets. This confirms the close bond between weekly rural markets and their assembly market, as well as the *lumo*'s place at the lower rungs of the market hierarchy. Due to their small size, it happens that prices on *lumos* are determined by a monopolistic wholesaler. In urban consumer markets, price setting is largely up to each individual trader (69%). As some *lumos* – and urban consumer markets - are too small to allow for competition, it is not surprising to encounter monopolistic practices on such markets.

Figure 4: Price setting, by market type



Source: market questionnaire

Price setting will take place differently according to the market chain that a product belongs to. According to key informants, traders set their own prices for coarse grains on 70% of markets. In the markets in which primary data collection took place, the state does not regulate coarse grain prices. This result confirms that there is a healthy amount of competition in the coarse grain sector. Conversely, the case of imported rice is indicative of a business largely under the influence of monopolistic wholesalers and by the state. Although individual traders set their own price for imported rice 53% of the time, wholesalers on outside markets determine prices on 27% of markets. The influence of external wholesalers bears witness to the influence of commercial networks on the imported rice distribution business. On a fifth of markets, the state sets the price of imported rice.

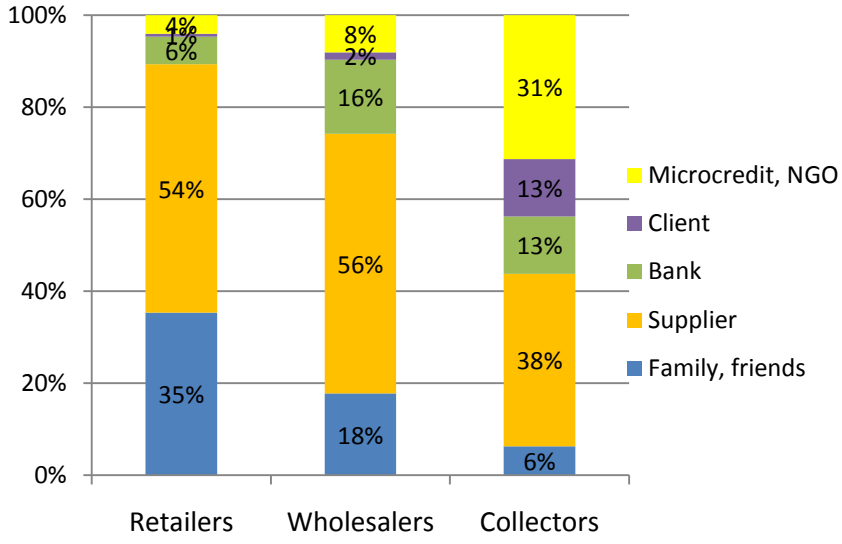
3.2.2 Credit and food security

Credit from a family member or from a supplier (himself frequently a family member) constitutes the main source of finance for traders. For retailers, 'formal' credit from a bank or a micro-credit institution is marginal, with such financing being the main source of credit for 10% of retailers (Figure 5). The supplier is the main source of credit for 54% of traders, closely followed by credit from family members (35%). In Mauritania, it was reported that in some cases, wholesalers pay retailers' taxes, underlining the close relationship between actors, which can create barriers to exit for indebted retailers.

As with retailers, wholesalers mainly rely on supplier credit (56%) and credit from family members (18%). By contrast, collectors seem to enjoy more widespread access to microcredit, which is the main source of financing for 31% of such traders. Collecting may be an activity less dependent on kinship or social networks than wholesale or retail trade. The interest rates charged by microcredit agencies are high, by contrast to the generally interest-free family loan or supplier loan. Supplier credit – a deferred payment facility – does not constitute a form of financing that would allow the development of a

business. The poor quality of credit is one of the main constraints of the trading system, limiting its capacity to act in favor of household food security.

Figure 5: Main source of financing



Source: trader questionnaire

Credit sales are widespread in the cereals market: some 90% of traders will grant credit to their customers. Some 70% of volumes are transacted on credit terms. The close financial link noted previously between wholesalers and retailers also extends to customers. For 81% of traders, credit is above all provided to attract customers. For retailers, credit is interest-free 84% of the time. Credit is extended for a period of between a week and a month before reimbursement is due. Nonetheless, a customer paying in cash will have stronger bargaining power than a customer being granted credit. Allowing customers to defer payment for merchandise entails a risk, that of not being reimbursed. Retailers estimate that 30% of customers do not reimburse by the deadline. It is therefore probable that retail prices incorporate an additional margin that spreads this risk among all sales. In this way, consumers paying cash and settling their debts in time indirectly 'subsidize' insolvent households.

This widespread access to cheap credit constitutes an important coping strategy allowing consumers to defend their food access, especially when household purchasing power declines. This large access to credit is a phenomenon noted in household vulnerability surveys implemented in the countries of the western basin. The vulnerability assessment in urban areas of Senegal (WFP, 2008c) is illustrative of the major role that credit plays in household food security: half of households increased their credit purchases during the increase in food prices that year. In Pikine, a deprived Dakar suburb, households whose food consumption is 'poor' are also those that most frequently buy on credit. In Guinea, the main reason for household indebtedness is the acquisition of food on credit, both in urban and in rural settings (WFP, 2009c). Through retail credit, the market offers an additional food access mechanism to vulnerable households.

Credit has a different function in the livestock business, where 36% of traders concede that there is a difference between the price of a good bought in cash and the price of the same good purchased on credit. It is likely that this proportion is underestimated, due to

the existence of social norms that reprove charging interest for loans. Outside the holiday season, the major customers on livestock markets are butchers, most of whom buy on credit and pay their suppliers after having sold the meat to consumers. Fulani livestock retailers complain that butchers take too long to reimburse the money they owe. However, they recognize that credit sales are the best way to promptly sell a product whose maintenance cost increases with time. According to livestock traders, 78% of customers reimburse their loans within the agreed timeframe, usually the next market day. The interviewed traders add a fee of 2,000 CFA francs to the price of each sheep sold at credit, a payment which is closer to a credit premium than an interest rate in the common sense of the term.

3.3 Trader's constraints and capacities

The analysis of price setting has shown that price setting is least on rural weekly markets and for imported rice. Retail credit sales play an important role in ensuring household food access. The analysis of trader capacities and constraints which follows elaborates on the market's capacity to provide services to food insecure populations.

3.3.1 Main constraints

Lack of capital is the main difficulty that traders face (Table 15). Indeed, although 57% of traders claim to borrow funds, such financing is evidently insufficient to grow their business. We will recall that the main source of financing for traders is a short-term supplier credit allowing deferred payment for merchandise – a form of credit that does not allow investment. The insufficiency of credit and its low quality are a constraint affecting retailers, collectors and wholesalers alike, and which to some extent explains the influence of commercial networks that favor a pooling of finances .

Table 15 : Traders main constraints

Trader type	1st constraint	2nd constraint	3rd constraint
Retailer	Lack of capital	Poor roads	Consumer's lack of purchasing power
Wholesaler	Lack of capital	Poor availability of transportation	Lack of crédit
Collector	Lack of capital	Low margins	Storage

Source : trader questionnaire

The poor state of infrastructure represents a major constraint to traders in the western basin. Wholesalers and collectors consider that poor roads and the lack of storage space hamper the development of their business. Perhaps as a consequence of the basin's dependence on a steady stream of overseas imports, the availability of storage space is limited. These storage facilities can be insufficient, especially during the local harvest season. On markets such as Kaolack, where infrastructures have evolved very little since independence, the lack of physical storage space at the market represents a major limitation to business.

The poor state of roads increases transaction costs, penalizing producers and consumers alike year-round, but especially in the rainy season. The market survey implemented in Guinea indicates that transportation is much less efficient during the rainy season, when costs increase and delays are frequent (WFP 2010a). For instance, the Conakry-

Nzérékoré journey, a 24-hour truck journey in the dry season, increases to 32 hours in the rainy season. On the route, the cost of transport during the rainy season is a one-third above the dry season rate. This inefficiency of the transport sector is most evident during the lean season, which coincides with the rainy season, exacerbating seasonal food availability and access difficulties.

These results can be linked to the logistics performance index of the World Bank, presented in Table 16. It shows that with the exception of Senegal, the countries of the basin achieve very low rankings. Mali and Guinea-Bissau, respectively ranked 139th and 149th of 155 countries, area among the poorest performers of the index, due to the inadequacy of infrastructure and logistics services in both countries.

Table 16 : Logistics performance rank for western basin countries

Country	Rank (out of 155 countries)
Senegal	58^{e}
Guinea	97^{e}
Gambia	113^{e}
Mali	139^{e}
Guinea-Bissau	149^{e}

Source : World Bank (Mauritania is not ranked)

Wholesale traders and importers felt that petty corruption hampers their business. In its report published in December 2009, the Observatory of Abnormal Practices (OPA) revealed that transportation on the Dakar-Bamako route is notably subject to illicit payments and delays. Some 26 road checkpoints (gendarmerie, police, and customs) are established on the Senegalese portion of the route, and 11 on the Malian segment. The OPA estimates that there are between 2 and 4 a checkpoints every 100km on this route. Illegal payments amount to some 45,000 CFA francs per truck. These nuisances are an obstacle to the development of long-distance trade that could potentially sustain the livelihoods of producers. The inadequacy of infrastructure and petty corruption translate in to higher transport cost and longer transit times, which in turn imply lost opportunities for producers, as well as more expensive and less diverse produce supply to consumers.

Finally, retailers are confronted with low consumer purchasing power. At given times of the year, supply saturates markets: 'there are more sellers than customers', complained a palm oil retailer in Diaobé. Low incomes, especially in rural areas, constitute a limiting factor for traders. The very modest extent of retailer's business is telling of the limits to retail trading: some 90% of retailers have fewer than 70 customers in a week. For such traders, credit sales are an excellent way of keeping customers, and making demand solvent. However, the high percentage of sales on credit also limits retailer's financial capacities, who find themselves dependent on their supplier's goodwill.

3.3.2 Response capacity

In spite of the numerous constraints they face, cereal traders of the western basin have the capacity to respond within a short timeframe to increases in demand, especially for

imported goods. Indeed, nine of ten traders claim to be able to respond to an increase in demand (Table 17). For retailers and wholesalers, 60% of traders report being able to meet increased demand within a week, demonstrating the confidence they have in their ability to resupply.

Table 17 : Can the trader respond to additional demand

Trader type	No	Yes, in less than a week	Yes, in more than a week
Retailer	15%	60%	25%
Wholesaler	6%	60%	35%
Collector	13%	31%	56%

Source : trader questionnaire

Figure 6: Coarse grain market chain

Response time to meet additional demand is, however, longer for collectors. To start with, these actors have low storage capacities. Moreover, collection entails high transaction costs. As a consequence of the dispersal of supply in the hands of a multitude of producers, a collection operation implies a large number of transactions, which take time. Only 31% of collectors claim to be able to respond to an increase in demand within a week. One can also presume that poor infrastructure and lack of storage facilities on weekly rural markets complicates the collecting business. The lower response capacity of the collection activity could be interpreted as a bottleneck in the local cereal trade (Figure 6). The imported rice sector, whose market chain does not include collection, has a higher ability to respond rapidly to an increase in demand. The structurally elevated demand for rice is also a factor supporting the response capacity of that sector.

Also confirming the market's response capacity, some 61% of cereal traders estimate that an increase in demand would be temporary, meaning that it would only last as long as it takes for supply to adapt. This result tends to confirm the result of secondary data analysis, which points to a degree of market integration, especially for imported rice in the basin. However, it should be noted that the negative responses to this question originate from markets located in the basin's hinterland. Namely, traders in Mbagne, Mbout and Selibaby in Mauritania, in Kayes in Mali and in Sare Bodio in Guinea consider that an increase in price would be prolonged (suggesting low response capacity). A distinction emerges between the response capacity of the markets in the coastal center of the basin, and the more isolated markets of the hinterland.

The response capacity of the central markets is a factor that favors the implementation of cash or voucher-based transfers for households in those areas. The imported rice

market is capable of responding to the additional demand that such programs would trigger. Market's response capacity would limit some of the operational risk inherent to cash or voucher based transfers (lack of stocks, price increases). However, the local cereal market chain and the peripheral markets of the basin do not perform as well. An in-depth study of the issue could provide useful guidance to institutions planning cash transfer initiatives to support food security.

3.3.3 Storage capacity

Sufficient storage capacity can allow the system to equalize peaks and troughs in price trends. It seems that the western basin's trading system has limited storage capacity. Although the majority of retailers has access to a storage facility, 38% of retailers do not store at all (Table 18). Retailers will store commodities for up to a month. Wholesalers and retailers will store for a longer period, between 6 weeks and 2 months, probably to take advantage of arbitrage opportunities. Some wholesalers will constitute coarse grain stocks at the harvest in October in order to resell them at a higher price in the lean season (June-August). In this respect the western basin behaves differently than in the eastern basin, where in the case of Dawanu wholesale market in Kano, traders maintain stocks for years, should commercial circumstances justify (CILSS et al., 2006).

Storage duration is fairly short in the western basin, which could constitute a risk in case of a malfunction in supply, such as the increase in the price of food commodities in 2008.. In two-thirds of visited markets, an increase in storage capacity is reported, suggesting that the market's capacity to respond to changes in supply and demand is being strengthened

Table 18 : Access to, capacity and duration of storage

Trader type	Access to storage	Storage capacity (tons)	Duration of storage (weeks)
Retailer	62%	15	4
Wholesaler	82%	71	6
Retailer	76%	73	8

Source : trader questionnaire

3.4 Market integration

Market integration supports the adaptation of supply to demand and allows food access at stable and acceptable prices thanks to efficient distribution networks. The integration of markets within a basin is an asset to producers, as it constitutes an opportunity to channel produce. Consumers benefit from a regular supply stream. Market integration favors the improvement in food supply as a consequence of increases in productivity linked to farmer specialization.

Market integration supports food security. In an efficient market, one expects prices to vary synchronously in the markets of a given basin. This stability in price differentials arises from the possibility that actors have to exchange commercial information and physically transfer commodities between markets. In doing so, the commercial system allows an efficient transfer of resources, for example between markets with surpluses and markets with deficits. One expects prices to be more stable in markets that are part of an integrated system than in isolated markets.

In order to assess the degree of market integration, this study presents a Granger causality test, and a price variation analysis. The first test will identify relationships between prices in between two markets. The second expresses the stability of price series. The analysis is based on price series from national MIS from the Gambia, Guinea, Mali, Mauritania and Senegal. The incomplete state of the dataset in Mauritania is a limiting factor, a continuous series is only available for the capital Nouakchott. For Guinea and Guinea-Bissau, a price series for imported rice is only available for the capital. . Price series are expressed in the same unit – the CFA franc – to control for bias linked to exchange rate fluctuations. A more exhaustive presentation of the methodology and results appears in an annex to this report.

3.4.1 Granger causality test

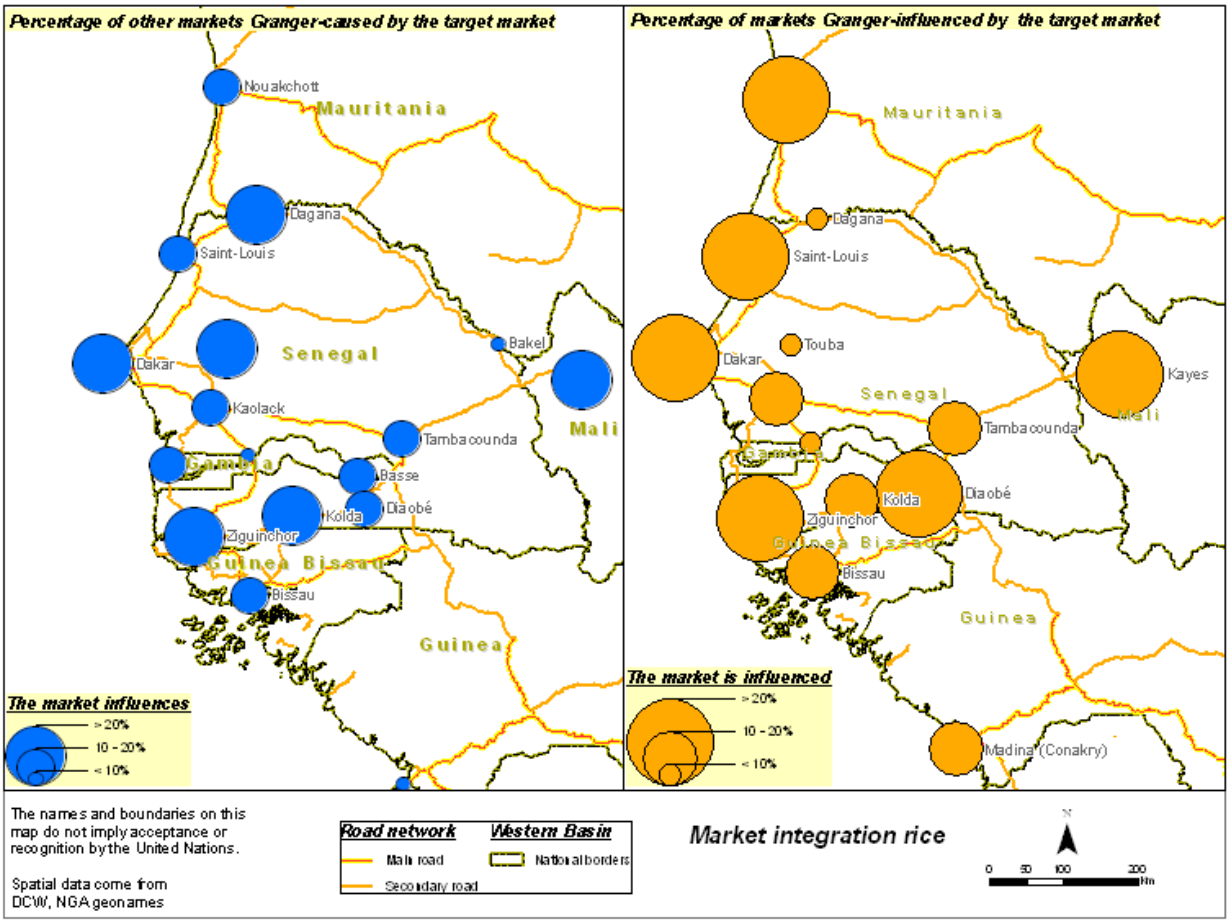
The Granger causality test allows the identification of 'leading' markets, those that cause price changes on other markets. The test also detects 'lagging' markets whose prices are influenced by changes in other markets.

The Granger causality test undertaken suggests that integration in the imported rice market is fairly strong, as most markets are linked to many others in the basin. Specifically, Dakar is in relationship with 70% of analyzed markets. In the case of imported rice, the study identifies Dakar and Touba (Senegal) and Basse Santa Su (Gambia) as 'leading' markets in the basin. Indeed, Touba Granger-causes price changes on 24% of the markets, while itself influenced by 6% of markets. We know from Senegal MIS data that imported rice prices in Touba are the lowest in the basin, Touba's influence arises in its role in the supply and storage of imported rice. The market in Basse Santa Su Granger-causes price changes on 18% of the markets in the basin. The geographic location of Basse Santa Su allows it to influence rice price levels in the nearby markets of Diaobé and Ziguinchor in Senegal. The market in Dagana (Senegal) Granger-causes price changes in 24% of markets, which points to the determining influence that demand in the Senegal river valley has on price levels in the basin overall.

Conversely, the analysis identified 'lagging' markets, where price levels are subject to external influences. The market in Diaobé is such a market, as prices there are Granger caused by 53% of the markets in the basin. The imported rice trade in Diaobé is marginal compared to that of other commodities, perhaps explaining the market's passive role in price setting. Although Dakar Granger-causes price changes on 31% of markets, it is itself influenced by price levels and demand emanating from other markets (41% of markets in the basin contribute to price levels in Dakar). An increase in demand for imported rice in up-country markets in Senegal, causing upward pressure on rice prices on those markets, would translate into increased demand in grain from Dakar that would cause a price increase in Dakar. In the case of imported rice, specific markets function in isolation from the system. This is the case of Bakel, which Granger-causes price trends in a single market in the basin.

The Granger causality test for imported rice show that the percentage of markets that are Granger-caused – i.e. 'lagging' markets – is higher than those Granger-causing other markets – i.e. 'leading' markets (Map 8). The phenomenon could point to the influence of demand shocks on price formation on main markets, which is characteristic for an imported commodity whose supply shocks occur outside the regional economy.

Carte 8 : Imported rice market Granger causality test

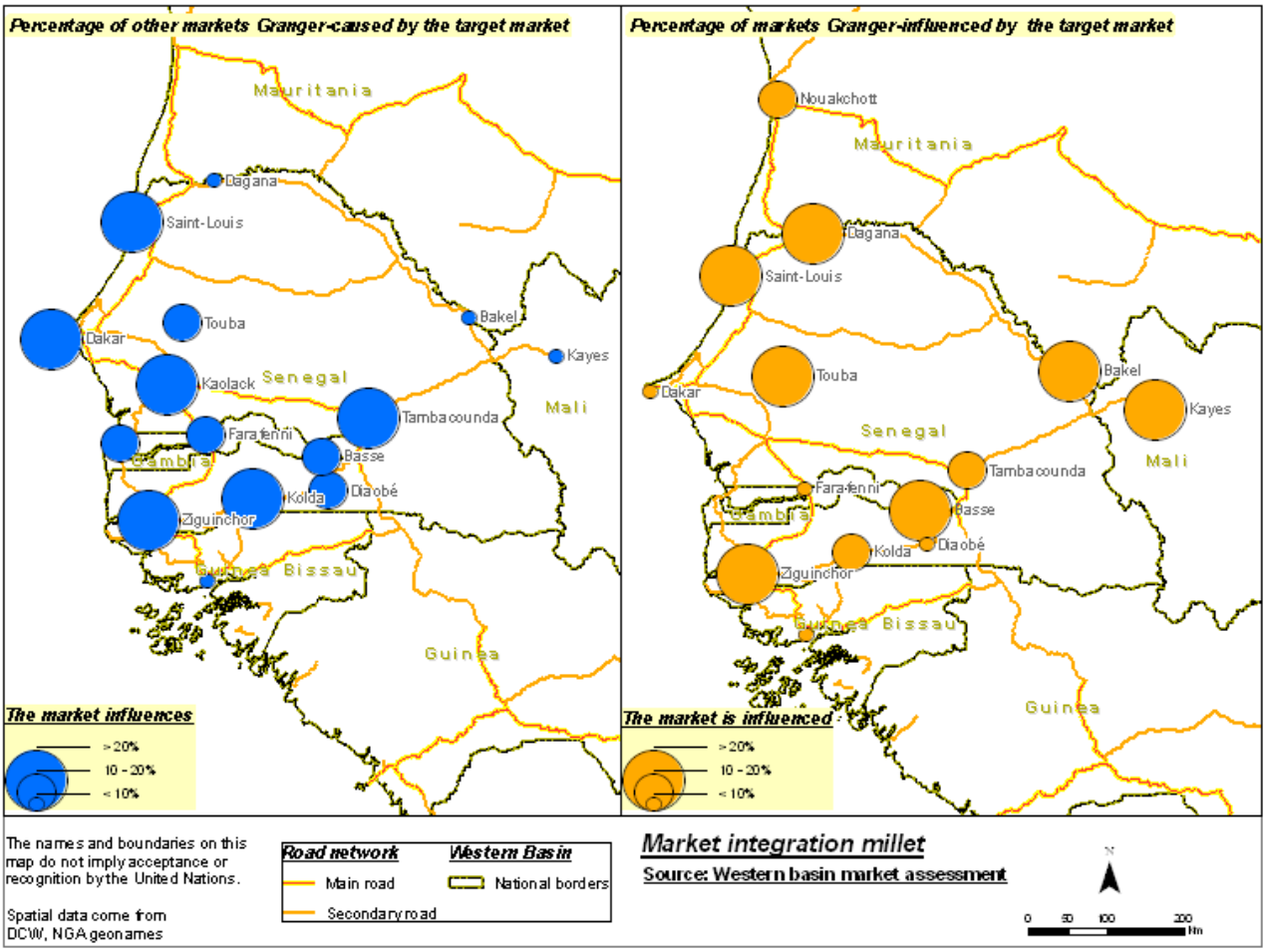


Source : MIS, FEWS NET, WFP.

In the case of coarse grains, the analysis identifies Kaolack as the leading market of the western basin. Indeed, Kaolack Granger-causes the price of millet on 54% of the markets. The importance of Kaolack in the millet market arises from its function as the main assembly market in the millet-producing groundnut basin. We note that Dakar Granger-causes millet price changes on 31% of markets, without being influenced, a phenomenon that can be attributed to the importance of consumer demand in that city. 'Lagging' markets include Kayes, where prices are under the influence of 46% of the basin's markets. Ziguinchor is under the influence of 54% of markets. Of note, the market in Basse Santa Su – a 'leading' market in the case of imported rice – is a ''lagging' market in the case of millet, as prices there are under the influence of 38% of markets in the basin. Again, Dagana market is closely linked to others in the basin: the market Granger-causes price changes on 23% of markets, while prices in Dagana are themselves influenced by 38% of other markets.

The market in Nouakchott is linked to few other markets in the basin, which tends to confirm that the city's main supply source is western Mali, which is itself linked to the central basin. Millet is not a staple food in Nouakchott.

Carte 9 : Millet market : Granger causality test



Source : MIS, FEWS NET, WFP.

In the case of imported rice, an additional analysis of the transmission of international prices (presented in full in this report's annex) shows that Dakar market works efficiently. The effects of international price shocks are of shorter duration in Dakar that in markets in the interior of Senegal. The least efficient market is Tambacounda, where price shocks last much longer. This illustration again illustrates the dichotomy between the fairly efficient central markets, and those of the periphery, who amplify international shocks, a risk for the food access of imported rice-consuming households.

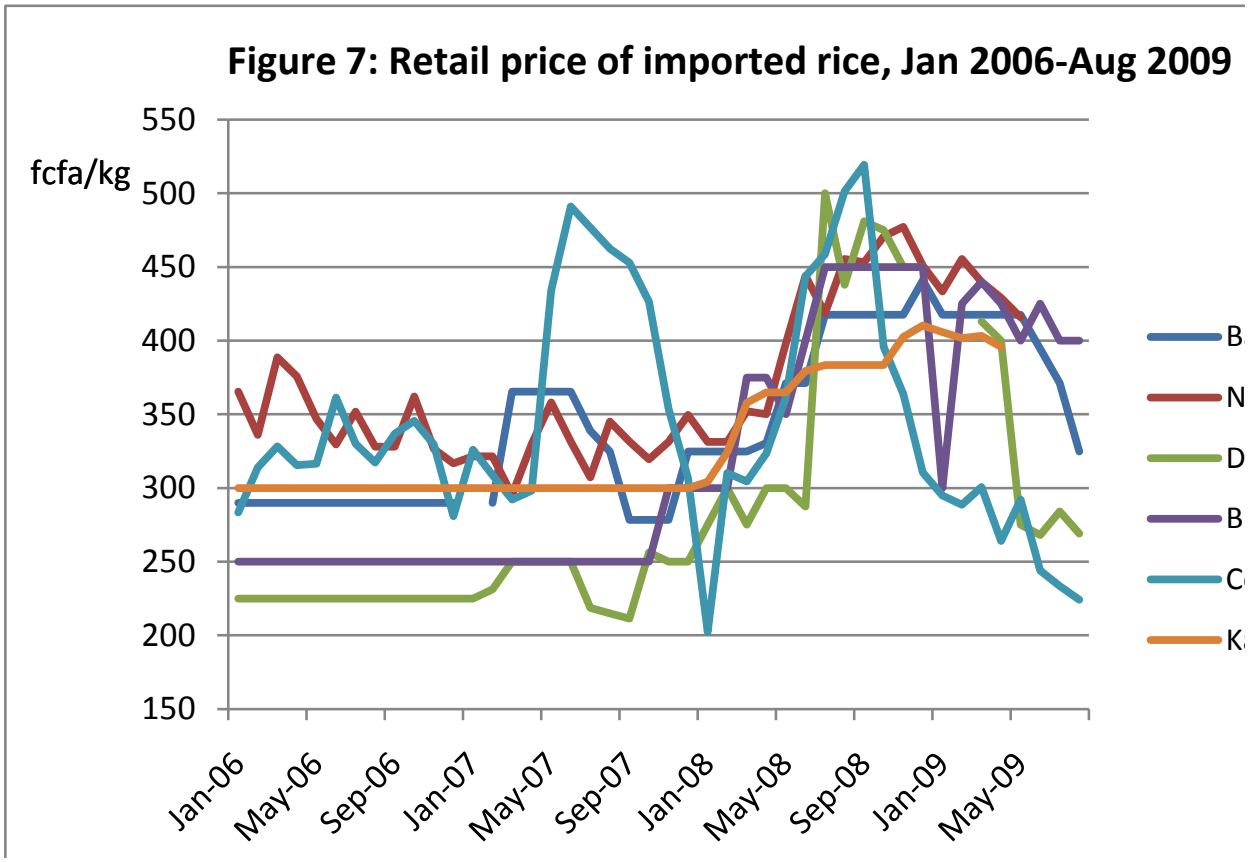
The Granger causality test reveals discrepancies in the degree of market integration - - the case of imported rice indicates shows the influence of demand in price formation, the case of millet reveals the determining role of production in the groundnut basin. The interdependent nature of Senegalese and Gambian markets is noted. It is emphasized that a large number of markets that can be presumed to be less integrated than others are not included in the analysis due to the fact that they are not covered by market information systems, or due to incomplete data series. This bias is a limitation of the exercise.

The results above suggest that MIS reporting focus on imported rice trends on the leading markets of Dakar, Touba and Basse Santa Su, as price changes on those markets lead to price changes on a large number of other markets in the basin. For millet, price trends in Kaolack will be monitored to anticipate variations on other markets of the basin.

3.4.2 Price stability of millet and imported rice

International commodity price levels have been exceptionally volatile in recent years. For example, the price of 100% broken rice has increased from USD 385 to USD 986 per ton FOB Bangkok between the months of January and May 2008 (FAO, 2009). The analysis of price variation can help assess the degree of market integration between specific market pairs as well as the extent to which price instability at the international level was passed through to local markets.

Figure 7 shows the trend of retail imported rice prices on the markets of Banjul, Bissau, Conakry, Dakar, Kayes and Nouakchott between 2006 and 2009. We see that price variations usually occur synchronously in the area, with the exception of Conakry. Imported rice prices in Nouakchott are the highest; they are usually lower in Dakar, a factor linked to the large imported rice volumes arriving at its port. The lower price of rice in Senegal is also linked to the quality of the rice commonly consumed in the country: 100% broken rice, a rice grade that trades at a discount. The most variable series is that of the price of imported rice in Conakry. Examination of the correlation coefficient between market pairs shows values above 0,75 for nearly all pairs, except those involving Conakry (Table 19). Prices in Conakry behave independently from the trend on other markets during the period. The instability in the price of rice in Conakry could be linked to the political events (general strike and violence in 2007, followed by export restrictions) and to high inflation.



A strong correlation exists between the price of rice in Bangkok and the retail price of rice in the basin's capitals, confirming the influence of international prices on price levels for the commodity in the basin.

Table 19 : Correlation coefficients, imported rice prices, 2006-2009

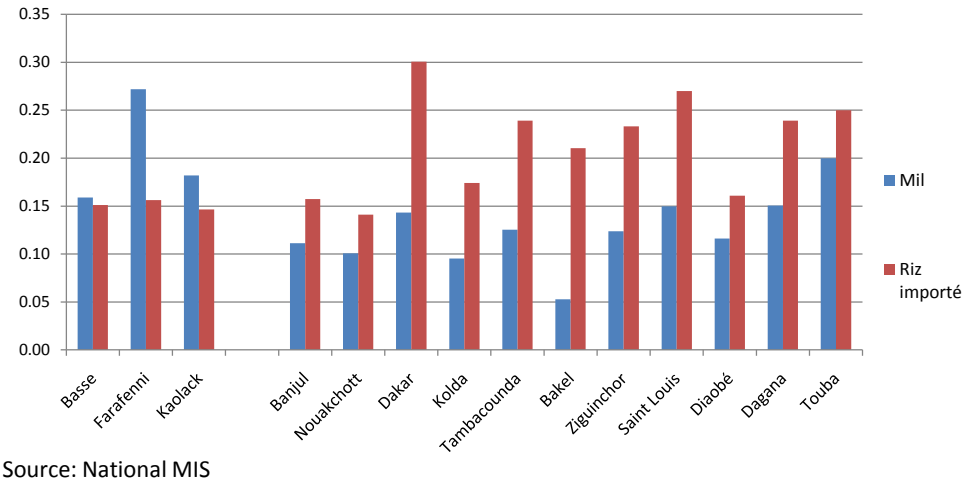
	Bangkok	Banjul	Bissau	Conakry	Dakar	Kayes	Nouakchott
Bangkok		0.77	0.88	0.11	0.78	0.89	0.82
Banjul	0.77		0.81	0.11	0.83	0.82	0.80
Bissau	0.88	0.81		0.01	0.86	0.92	0.87
Conakry	0.11	0.11	0.01			-0.09	0.16
Dakar	0.78	0.83	0.86	0.25		0.79	0.84
Kayes	0.89	0.82	0.92	-0.09	0.79		0.89
Nouakchott	0.82	0.80	0.87	0.16	0.84	0.89	

Data : National MIS. Bangkok prices are FOB.

For coarse grains, the price of millet is lowest during the same period on the markets of the Gambia and on Kaolack, which confirms the greater groundnut basin's role in millet supply in the basin. Millet is scarcer, and therefore more expensive, in Bissau and Nouakchott.

According to Daviron *et al.* (2008), the price of millet was four times more volatile than that of imported rice between 2007 and 2008 in Dakar. The analysis presented here allows us to comment on the phenomenon. Overall, it seems that the price of rice was more stable than millet between 2006 and 2009 in the basin. However, millet is the more unstable commodity in the Gambian markets of Farafenni and Basse Santa Su, and Kaolack in Senegal. These markets also experienced above-average variation coefficients for millet (Figure 8). The phenomenon can be linked to the insufficient nature of millet production, to low stocks of the commodity and the areas' proximity to urban areas with high demand. The high variation in both millet and imported rice prices implies that the area's population faced unstable prices that limited substitution possibilities between rice and millet at the height of the crisis.

Figure 8: Variation coefficients for millet and imported rice, 2006-2009



Source: National MIS

Inadequate millet availability in the Gambia-Senegal groundnut basin, combined with a shock to imported rice prices; are perhaps the most likely explanation for the high level of vulnerability to food insecurity. In August 2008 in Senegal, 28% of households in the groundnut basin were assessed to be food insecure (WFP 2008a), making the area among the country's most affected by high food prices and the reduction in cereal production in 2007.

Over the 2006-2009 period, when grain prices were exceptionally volatile on the international market, price instability did not entirely pass through to the cereal markets of the western basin's countries, with the exception of the groundnut basin.

The relative stability of prices in Nouakchott may be linked to incoming trade flows from Mali, in addition to those that might originate from the groundnut basin, as well as to the measures that authorities had taken to regulate grain prices during the period (CSA, FEWS NET, WFP 2009).

Are markets efficient ? The analysis suggests that the western basin trading system operates to avoid long-standing obstacles: poor access to international finance, inadequate infrastructure and weak purchasing power. To some extent, the existence of strong trading networks supports the food security of households through a widespread system of cheap credit to consumers whose costs are spread out among solvent buyers. Markets are able to respond to increased demand, especially for imported rice.

However, all of this has a cost: at times of crisis; the strong concentration of the rice import and cashew trades are risks due to the disproportionate influence that a handful of actors could wield and whose actions could take place to the disadvantage of the consumer and the producer. Moreover, existing commercial networks do not have the capacity to provide their members with the financing necessary to fuel their businesses' growth. Social network's influence also translates into rigidity in market entry and exit. The cereal markets of the coast and along the main roads are well integrated, with the

notable exception of Guinea. By contrast, the smaller, under-equipped markets of the basin's hinterland are less closely linked to central markets.

The strong response capacity of the rice import market, especially in those most closely integrated with the system's leading markets, is a factor favorable to market-based responses to food insecurity, such as local food purchases, the use of vouchers or cash transfers. It is noted that such modalities are less adapted to the specific contexts of the more isolated markets of the basin's hinterland, such as the rural areas of the upper Senegal river valley, the Mauritanian Aftout, upper Guinea and southern Senegambia.

Highlights :

- The sectors linked to the world market – imported rice and cashew nuts – are highly concentrated, constituting a risk to both consumers and producers.
- Retailers frequently sell on credit to consumers, which supports household food access in times of crisis
- The solid response capacity of markets in coastal areas (especially for imported rice) makes it possible to implement market-based responses to food insecurity in such areas. These options are less suited to markets located in the basin's periphery.
- The markets of Dakar and Touba (Senegal) and Basse Santa Su (Gambia) are leading markets for imported rice in the basin. Kaolack (Senegal) is the leading market for millet. The markets of the basin's hinterland and in Guinea-Conakry are less well anchored to the system's core.

Chapter 4. Markets in Adjustment

The trading system in the western basin is in constant flux. In order to understand the outlook for the system in coming years; this chapter outlines the effects that economic and political shocks have had on the markets' main characteristics. Firstly, it assesses the the consequences that higher prices and the economic crisis have had, and considers the effects that Guinea's instability have had on cross-border trade for tropical commodities. The chapter also discusses the policies that authorities have implemented to mitigate the impact of the crisis. .

In recent years, the western basin has experiences a series of economic shocks whose existence might have influenced the relationship between markets and food security. The price increase of 2007-2008, especially for rice; created a shock for net buyers and a strong incentive for local producers. The increase in petroleum prices since 2008 has increased the cost of transportation in the basin. The economic crisis of 2009 has reduced the price for cash crops and has provoked a readjustment in exchange rates. These trends are shaping the future of food trade in the basin.

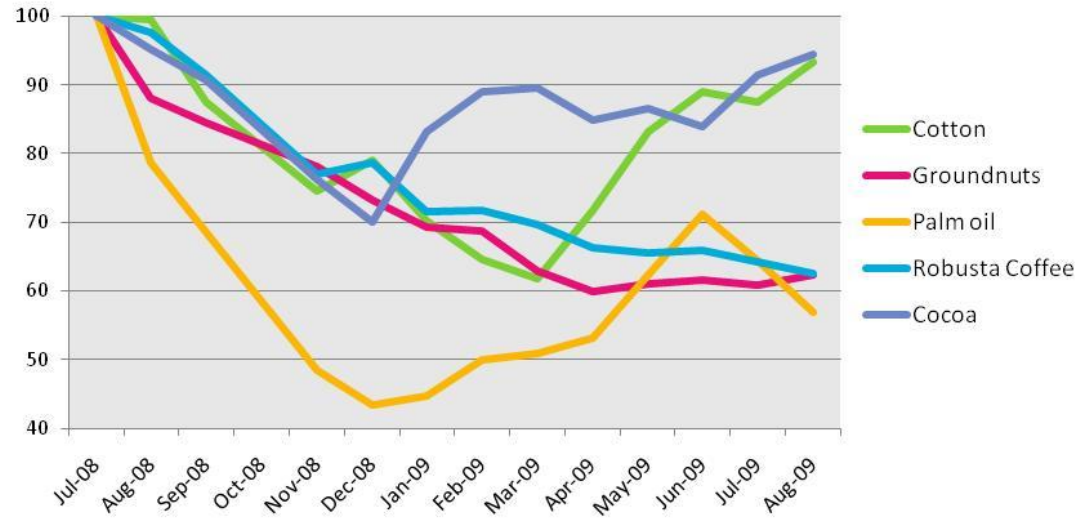
4.1 The impact of the economic crisis

Starting in mid-2008, the world economy entered its worst recession since the 1930s. The crisis reduced the availability of credit and a slowdown in capital flows which led to a sharp decline in economic growth and trade. According to the United Nations (2010b), world GDP decreased by some 2,2% in 2009 and world trade has declined by 12% compared to the previous year. Capital flows to developing countries collapsed, from USD 403 billion in 2007 to 55 billion in 2009. After decades of sustained growth, remittances to developing countries declined by 6,1% in 2009.

The global crisis has had an impact on West Africa : the crisis has caused a large decrease in the prices of export commodities produced in the region, including groundnuts, palm oil, cotton and coffee (Figure 9). Groundnuts and coffee prices experienced a 40% decline between July 2008 and July 2009. Households also suffered from the crisis' impact on employment and remittances (WFP, 2008c). These factors have also influenced agricultural trade: a decrease in volumes, a reduction in wholesaler margins and an adjustment in exchange rates have taken place. These phenomena affect the commercial system's ability to provide opportunities to producers and respond to consumer needs.

Figure 9: Price trends for West African Export Crops

July 2008 to July 2009. Index = 100 in July 2008.



Source: FAO

4.1.1 Decrease in transacted volumes, especially for cash crops

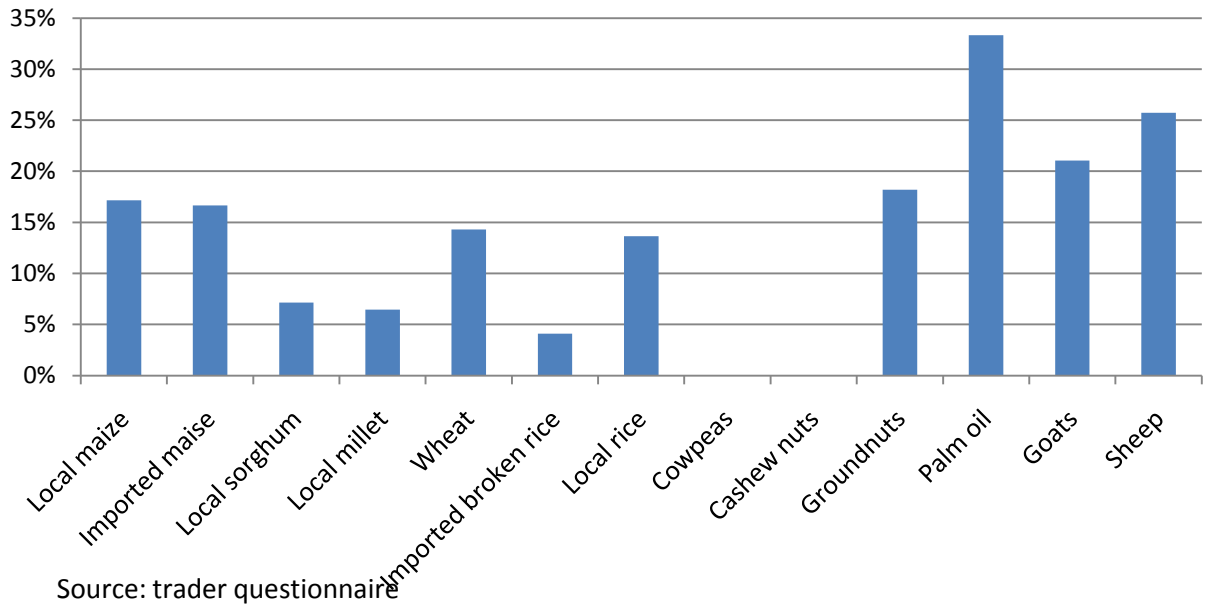
The international economic crisis has caused a reduction in sales on the markets of the western basin. With the exception of local millet, all commodities are affected by the trend. For example, 83% of traders report a decline in maize sales compared to the same period in 2007. Some 58% of traders witnessed the same pattern for imported rice. The fairly good performance of millet, whose sales remained stable, could be linked to the fact that the commodity is a cheap alternative to which households can substitute in case of a food price increase or a drop in income. The reduction in demand for cereals, aside from millet, can be linked to the drop in household incomes that the economic difficulties of 2008-2009 caused, and to the higher price of imported rice.

Cash crops are affected by a similar trend: 65% of cashew nut traders claim that the sold fewer quantities in 2009 than in 2007. Some 78% of palm oil traders experienced a drop in sales. Similarly, in the livestock business, three of four traders reported that their sales had declined compared to 2007.

The impact of the crisis on volumes was especially strong in specific cash crop and livestock trades, where a collapse in sales took place. Figure 10 shows the proportion of traders claiming that sales fell by more than 50% for a given commodity. For palm oil, a third of traders reported declines in sales exceeding 50% compared to 2007, a

phenomenon probably linked to the poor security environment in Guinea. The small ruminant business is also affected, 20 to 25% of traders perceive that sales of such animals have declined by more than half compared to 2007. The strong drop in demand for sheep and goats compared to 2007 is linked to the decline in household income. The survey took place during the period immediately preceding the holiday of Tabaski, a period of strong consumer demand for small ruminants.

Figure 10: Proportion of traders reporting a decline in sales exceeding 50%



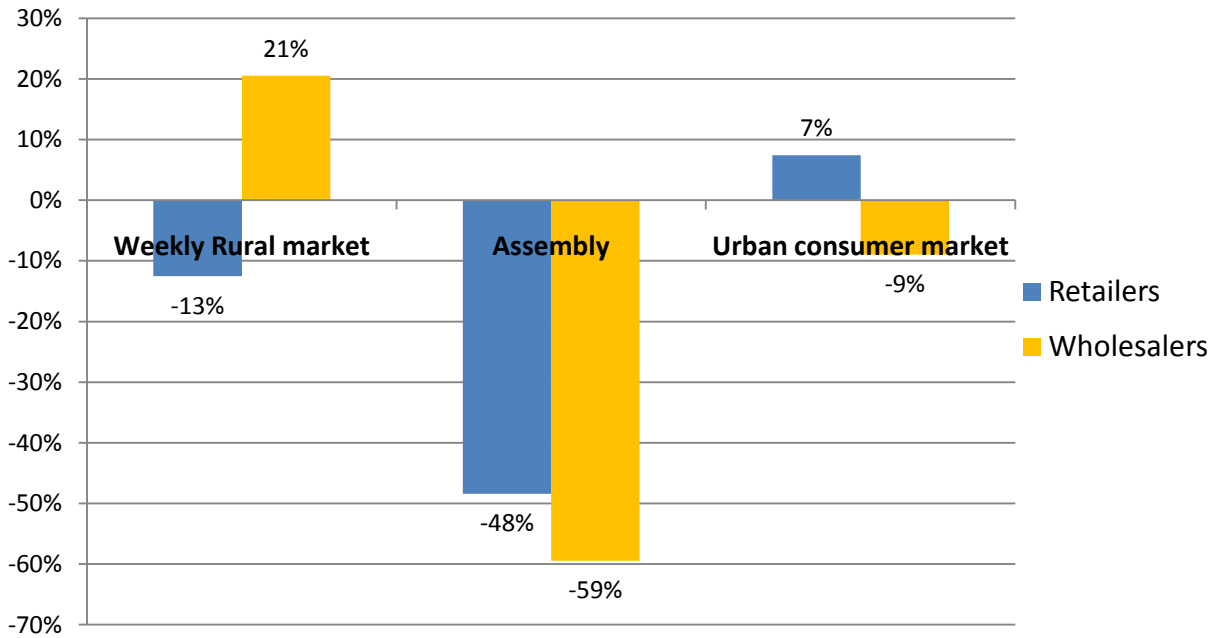
Source: trader questionnaire

The reduction in activity is perceived as transitory: five of six traders affected by lower volumes expect a return to pre-crisis levels within a year. One should note that the market's continued growth remains limited by significant constraints, including weak demand and poverty.

4.1.2 Effects on market structure

The crisis has modified the number of traders active on the markets, as illustrated in Table 11 below. Although the number has remained fairly stable on *lumos* and urban consumer markets, a sharp decline in the number on assembly markets. On these markets, the reduction in the number of active traders exceeds 50% according to key informants. It was not possible to determine to what activities these traders have turned to.

Figure 11: Change in the number of retailers and wholesalers between 2007 and 2009



Source: market questionnaire

The reasons explaining changes in market structure are also location-specific. In the case of Diaobé, a large assembly market, the reduction in the number of traders is mainly due to commercial restrictions and the poor security environment in neighboring Guinea. By contrast, the St Maur market in Ziguinchor is booming, as the return to peace in the Casamance has favored the market's expansion and the arrival of new traders. The market in Mbout (Gorgol) has been expanding since the completion of a surfaced road linking the locality to the main Mauritanian road network.

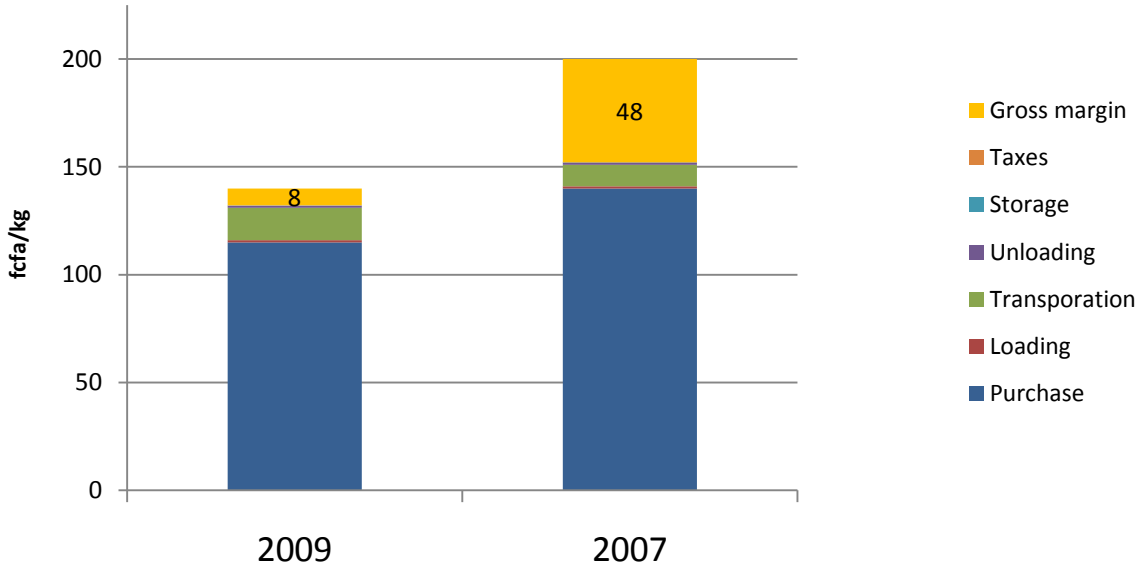
4.1.3 Lower margins for wholesale traders

The rationale for the specific impact that the economic crisis has had on wholesalers can be sought through the analysis of commercial margins. Namely, a reduction in the margins for wholesalers involved in the imported rice trade is noted. Wholesale traders in Touba, Fatick and Kaolack indicate that their average margin was 7% in 2007 against 1% in 2009. The reduction of the margin can to some extent be attributed to changes in the price of transporation, which has increased by 50% since the crisis. Other costs have remained stable. These lower margins, added to a reduction in sales volume and scarcer credit, are stressing the commercial system.

The increase in transportation cost has had an effect on wholesaler margins, especially for long-distance trade. The Figure 12 below illustrates trends for millet wholesalers in Touba. Due to the combined effects of a decline in the retail price of the commodity and an increase in transportation costs, the margin in 2009 is significantly smaller than in 2007. It should be noted that 2007 was a year of poor coarse grain production in Senegal, which explains why the prices reported for that year are relatively high. The cost of transportation represents 10% of the wholesale price of millet in Touba market,

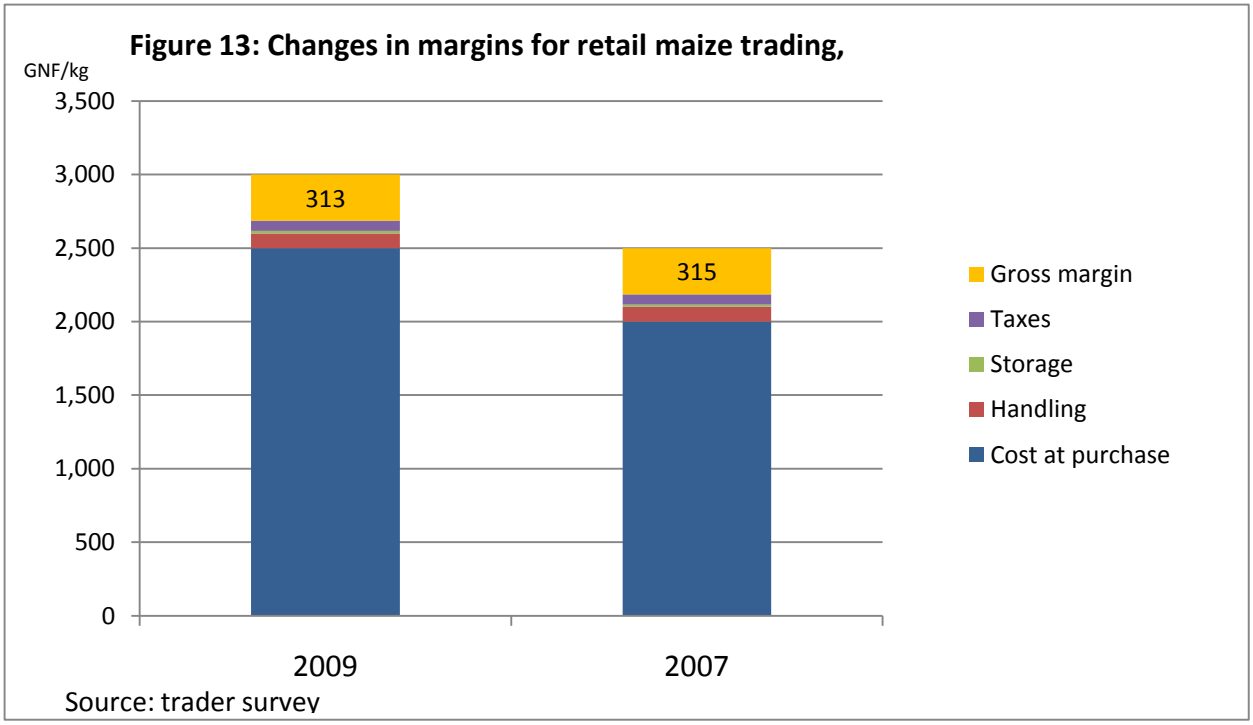
which is linked to producer markets by a short route. The increase in energy prices witnessed in 2007 and 2008 could resume with the economic recovery in 2010, possibly further squeezing marketing margins.

Figure 12: Margins for wholesale millet traders in Touba market (Senegal).

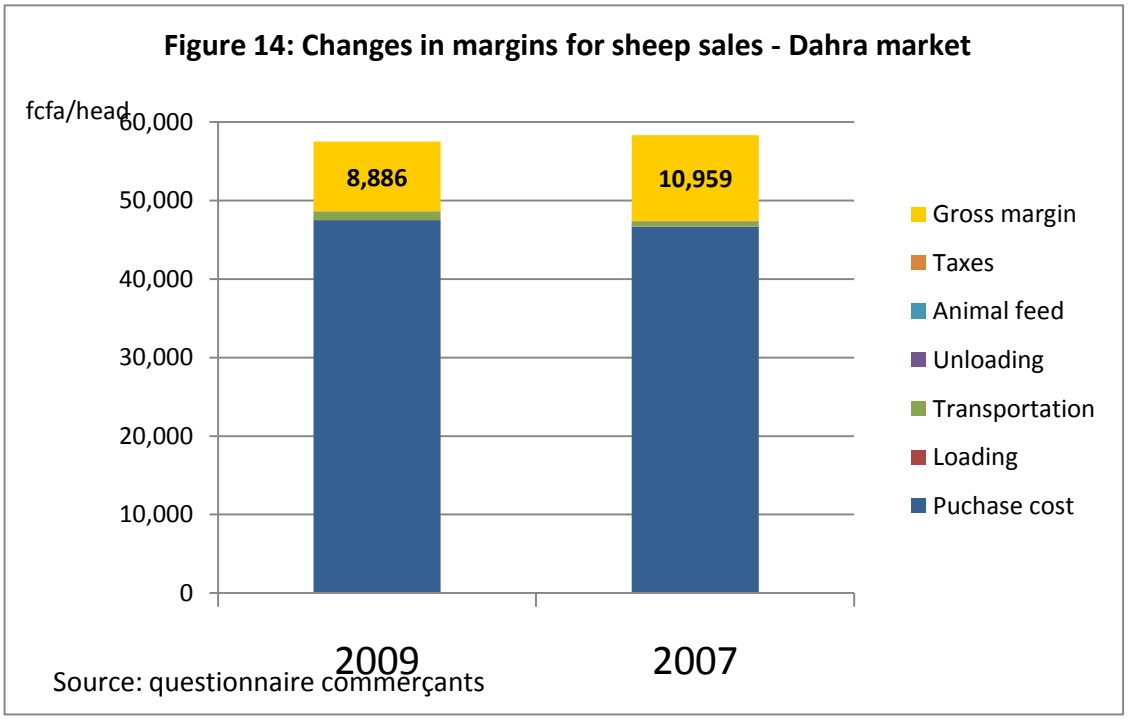


Source: trader questionnaire

Retail trade has been less affected by higher transport costs. The case of the retail maize trade in Conakry is presented below. Although the price of maize has increased since 2007 – from 2,500 to 3,000. Guinean francs per kilo – the retailer's margin has remained stable at some 300 francs per kilo. The business expenses that retailers face are less sensitive to energy prices than wholesaler's or collectors'. This protects traders active in the last link of the marketing chain from some of the effects of higher energy prices. The same trend was noted in most cases for retail trade in urban consumer markets.



As shown in Figure 14, livestock traders are facing a slight decline in their margins, which decreased from 11,000 to 9,000 CFA francs per sheep sold on Dahra market. The increase in transportation cost and (to a lesser extent) the higher price of cattle fed explain the decline in margins for the livestock trade.



4.1.4 Sourcing remains stable

Overall, cereal traders estimate that they have experienced a 20% decline in traded volumes. One could think that the effects of the crisis on sales volumes and on margins would have brought traders to modify their sourcing strategies. We note however that individual traders, sourcing arrangements have remained stable. Compared to 2007, most traders have retained the same supply source. Only 7% of retailers, 8% of collectors and 10% of wholesalers report having changed their main supply source. As supplier and family credit are widespread in the commercial system (Chapter 2), it is not surprising to observe that few of these under-capitalized traders have modified their sourcing strategy (Figure 15).

Figure 15: Main supply sources in 2007 and 2009.

Source: trader questionnaire

A handful of traders have chosen to change supply sources, due to higher transportation costs and lower margins. Such traders have tended to 'shorten' their supply arrangements by increasingly calling on sources in their home districts. The proportion of wholesalers reporting a foreign supplier as their main source in 2009 is smaller than in 2007, these wholesale traders have fallen back onto traders in their home country or district. For example, it is noted that traders based in Bafata and Cambadju in Guinea-Bissau, who used to source their imported rice supplies in Kolda (Senegal) prior to the crisis have changed suppliers and now obtain their supplies in Bissau due to an increase in price in Senegal. Collectors also seem to have shortened their supply arrangements by increasing their use of local sources.

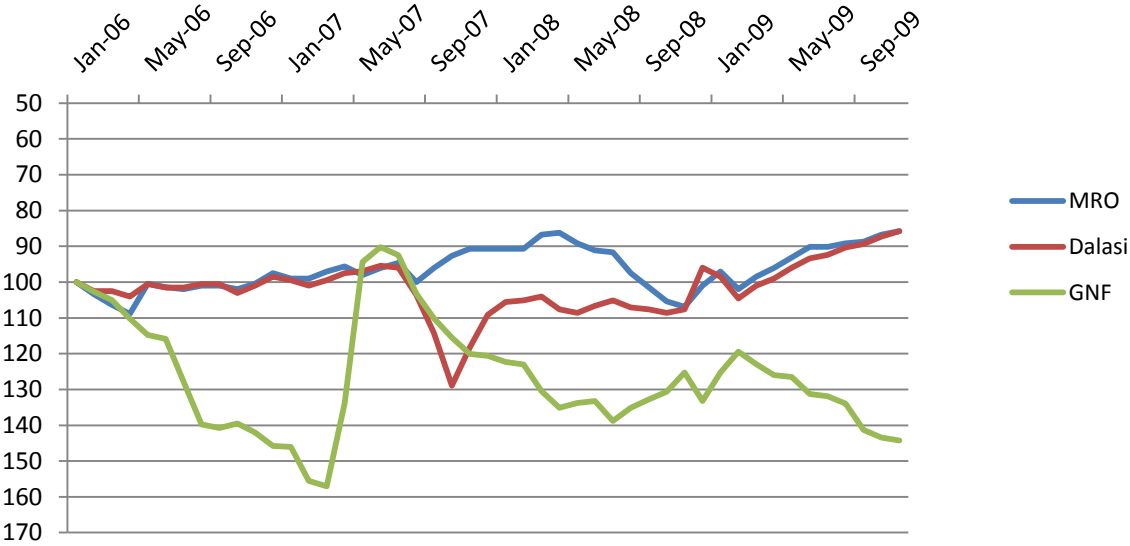
4.1.5 Effects on exchange rates

Economic changes in recent years have realigned the exchange rates between the currencies used in the basin, with consequences on the competiveness of the market chains and trade routes studied in this document. Senegal, Mali and Guinea-Bissau belong to the CFA franc zone. Gambia, Mauritania and Guinea use national currencies. As illustrated in Figure 16, the Guinean franc has lost some 40% of its value against the

CFA franc between January 2006 and November 2009. By contrast, the dalasi and ouguiya have appreciated by 15% against the CFA franc during the period.

The trend might have had the effect of making Guinean exports more competitive compared to countries in the CFA area. The weakness of the Guinean currency is part of Guinean traders' comparative advantage with respect to their Bissau-Guinean, Malian or Ivorian competitors, the main purveyors of tropical products in the CFA zone. The strength of the ouguiya compared to the CFA franc cuts into the competitiveness of Mauritanian herders, who must trade at lower prices in Senegal, their main market (Chapter 2). The appreciation of the ouguiya may explain the steady increase of Malian livestock exports to Senegal. The strength of the dalasi relative to the CFA franc might reduce the incentive to export Gambian groundnuts and imported rice to Senegal.

Figure 16: Exchange rate of the ouguiya, dalasi and Guinean franc against the CFA franc (index =100 in Jan 2006)



Source: oanda.com

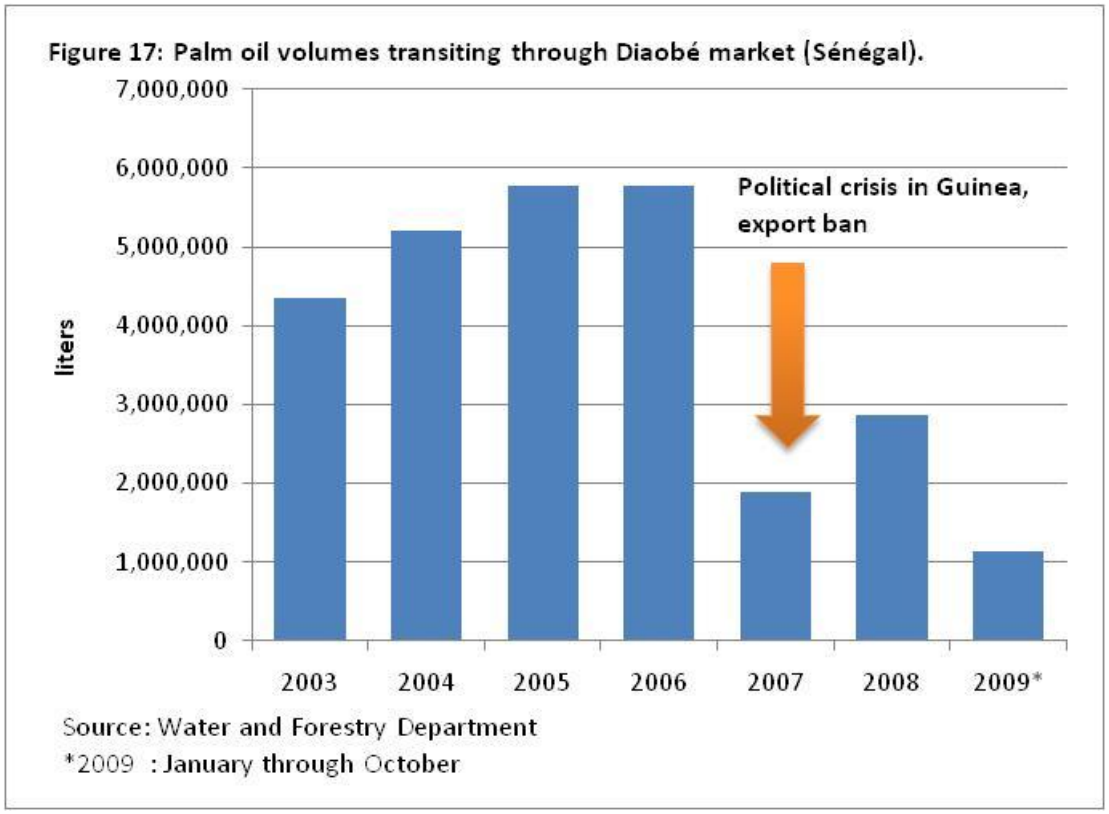
4.2 Impact of the crisis in Guinea

Chapter 2 described the existence of a long-distance trade between forest Guinea and the Dakar-Touba area of Senegal for palm oil. The trade flow also includes other cash crops grown in the forest zone, such as green coffee, black pepper and néré. Green coffee reaching Senegal is used to prepare Café 'Touba', a spicy drink that is competing with Nescafé in the streets of Dakar. The existence of this trade is an opportunity for Guinean (and Sierra Leonean) cash crop producers to whom it offers access to a buoyant regional market.

The instability that Guinea has experienced has reduced the flow of tropical products leaving the forest areas of Guinea and Sierra Leone. In January 2007, in the wake of a general strike that had brought the country to a standstill, Guinean authorities adopted measures that banned the export of food and forest products, in the objective of reducing domestic food prices. It was reported that local groups in Guinea blocked internal Guinean trade as well as trade entering Guinea from foreign countries, as was the case in Faranah, a locality close to Sierra Leone (DYNAFIV, 2008). When the CNDD took power in

late 2008, less restrictive trade measures continued to be applied. Guinean trade has suffered from a poor security environment, as well as the large number of checkpoints. These impediments are limiting the size of commercial flows at a level below their full potential.

The effect of these measures restricting commerce in Guinea is reflected in the volume of the trade flow in forest products reaching the market in Diaobé, in southern Senegal. According to the Water and Forestry Department in Diaobé, quantities handled in the market collapsed in 2007, after the adoption of trade restrictions in Guinea. Indeed, as shown on Table 17, palm oil imports dropped from over 5 million liters a year in 2006 to less than 2 million in 2007. In 2009, palm oil import levels remain well below their pre-crisis level. Palm oil traders in Senegal hesitate to travel to Guinea to secure additional supplies due to poor security.



The phenomenon may have had consequences on the income and the food access of cash crop producers whose livelihood was disrupted by the trade restrictions and the poor security environment. The food security assessment conducted in Guinea in 2009 sows a high incidence of food insecurity for cash crop producers in Guinea (Republic of Guinea, 2009). Overall, WFP estimates that the prevalence of food insecurity in Guinea has doubled between 2005 and 2009, increasing from 16% to 32% (2009, p17). Although it is not possible to attribute the entirety of the increase to the disruption to trade, it should be noted that cash-crop producing Forest Guinea is the agro-ecological region where the prevalence of food insecurity is highest, affecting 52% of households. The prevalence of food insecurity is especially high for households that depend on cash crop sales: 43% of such households are thought to be food insecure. Some 79% of these households live in the Nzérékoré region. The loss of access to commercial markets may have contributed to this high rate of vulnerability to food insecurity.

Box 2 : Diaobé – a threatened market ?

Diaobé market has existed since 1974, its creation aimed to favor trade between Senegal and newly-independent Guinea-Bissau. Today, the market gathers traders from Gambia, Guinea-Bissau and Guinea, organized in national 'syndicates'. Dioabé's halcyon days came to an end with the application of commercial restrictions in Guinea in 2007.

Moreover, the new market in Mandat Douane – located close to the Guinean border, and subject to fewer checkpoint inspections – could attract an increasing share of the traffic that currently heads to Diaobé. The road between Koundara in Guinea and Diaobé is strewn with checkpoints whose existence increases the cost to traders travelling to the market. On arrival in Senegal, Guinean traders must pass a customs inspection at Linkering. Checkpoints also exist in Kalifourou, Dialadiang, Pakour and Kabendou. Finally, there are separate checkpoints for the forest and water service, the hygiene service and and police at the entrance to Diaobé. By contrast, between the border and Mandat-Douane, there is only a single customs check to submit to.

'The day Senegalese wholesalers build storage facilities in Mandat-Douane, we will feel it', says Cheikh Diao, deputy mayor of the Diaobé-Kounkané commune. 'Diaobé market must be institutionalized', he concludes.

4.3 Policy responses to the crisis

National governments in the western basin adopted measures aiming to limit the impact of price rises on their national markets (Table 20). Our objective here is to determine the extent to which these policies influenced the behavior of market actors. In order to remain concise, the discussion focuses on the measures that were most commonly adopted in the basin, namely tax breaks on imports and support to local agriculture. Readers interested in learning more about the experience of the Senegalese subsidy are encouraged to read the August 2008 report on the matter (WFP, 2008b).

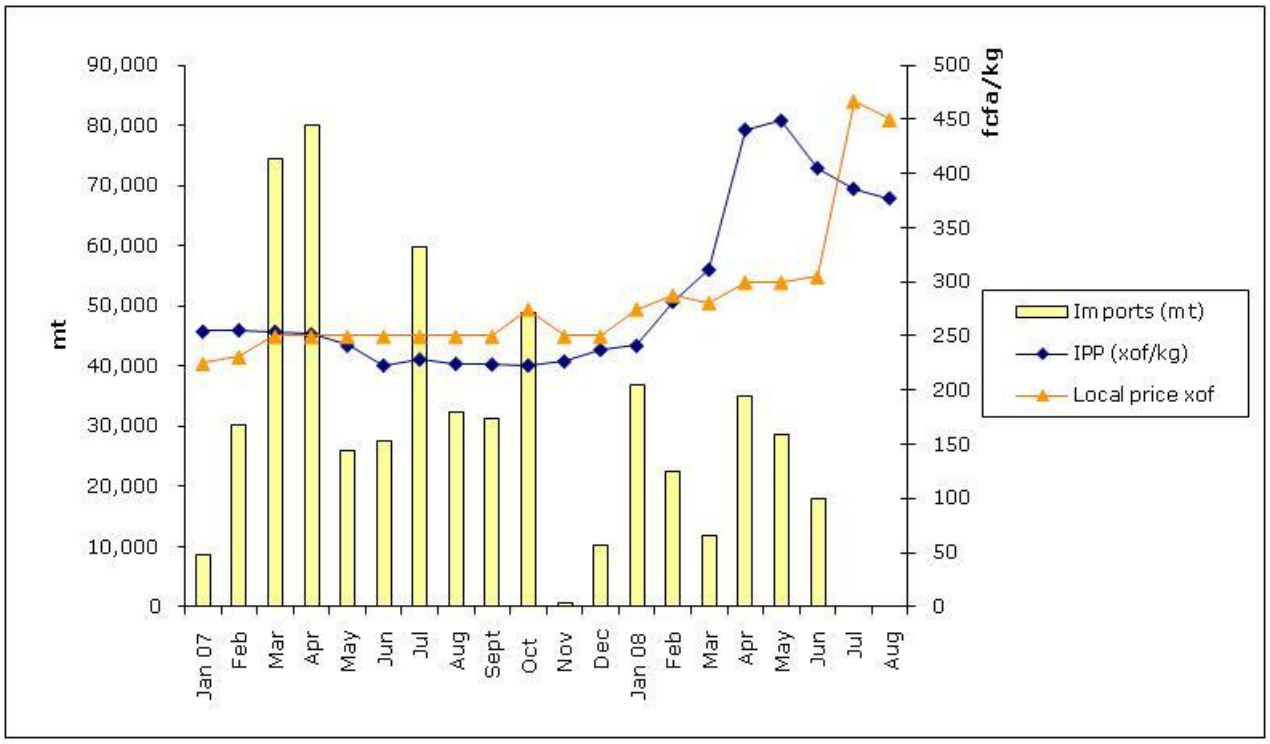
Table 20 : Policy responses to price increases in 2008

Policy measure	Gambia	Guinea-Bissau	Guinea	Mali	Mauritania	Senegal
Reduction of duty and taxes on imported rice	x	x	x	x	x	x
Subsidy for imported rice					x	x
Export ban			x	x		x
Support to agriculture	x	x	x	x	X	x

By mid-2008, importers were facing unfavorable import parity prices linked to the in FOB rice prices, higher sea freight rates and more expensive road transportation. Import volumes reaching the ports of the western basin had slowed, raising fears of imminent rice shortages in many countries. It is known that rice importers make their decisions on the basis of import parity costs. The case of Senegal shows that import volumes react to the differential between import parity cost and the local price of imported rice. The case of Senegal is telling in that the country accounts for more than half of imported rice trade volumes in the western basin.

As shown in Figure 18 below, rice imports in Senegal were sustained in 2007, during which local prices were above import parity prices. Conversely, quantities imported through Dakar seaport dropped when the import parity price exceeded the local price in January 2008. Quantities imported in the first semester of 2008 are inferior to the same period in 2007. This phenomenon indicates that a tax breaks on rice imports should, in theory, help the market react and increase the volume of imports.

Figure 18 : Import parity prices for rice in Senegal, Jan 2007-Jun 2008



Source : WFP (2008b).

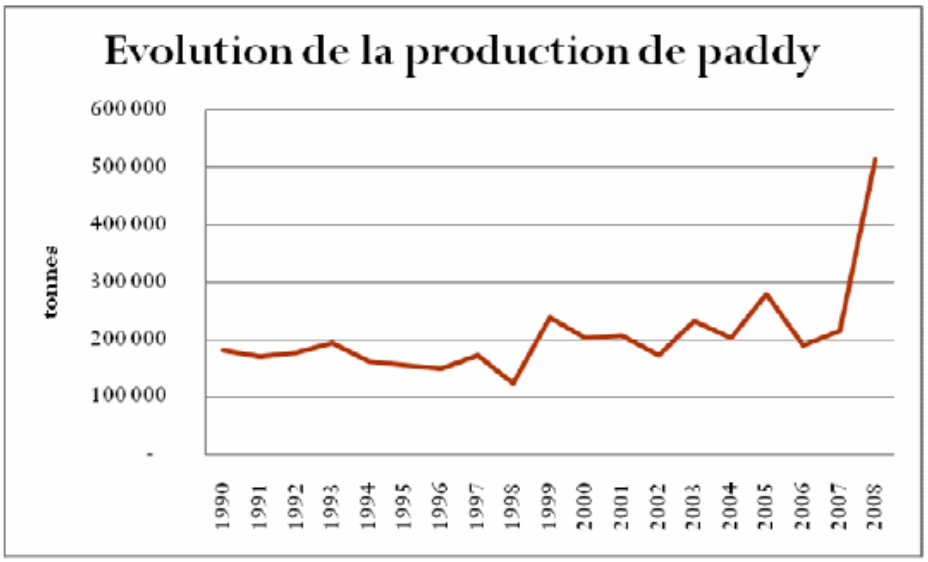
According to key informants, the decision to reduce duty and taxes on imported rice duty in 2008 had the effect of triggering additional rice imports, especially for importers interviewed in Guinea-Bissau, Guinea and Mauritania. Bissau –Guinean importers perceive that the reduction in duty on imported rice also led to a decrease in prices on the local market. At the time of data collection, the international rice market was again experiencing tightness, due to high import demand from the Philippines and lower agricultural production in India. Importers who gave their opinion on the issue felt that any increase in prices would be smaller than that experienced in 2008.

Measures favoring imports went hand in hand with programs meant to support national agricultural production that aimed to reduce countries' dependence on imports (especially rice). Overall, such programs aimed to increase grain production through investments and the provision of inputs to producers. Among these programs, the Mali Rice Initiative or the Senegalese Great Offensive for Agriculture, Food and Abundance, known as the GOANA, are emblematic of type of policy adopted to support local supply. These programs were active during the 2008 and 2009 growing seasons, both of which were also years of adequate rainfall. Although establishing a distinction between the respective impacts of policies and of meteorology is beyond the scope of this paper, market actors' perception of food availability trends deserve to be discussed.

Overall, an improvement in food availability is noted in the basin's markets, as shown in Figure 19. The improvement is most notable for local rice, whose availability has increased compared to 2007 on two thirds of markets. The result confirms those presented in the AFD study on local rice production in the Senegal river valley, which reported a significant increase in local rice production during the 2008 growing season,

driven by higher prices for the commodity. Higher prices for imported rice has favored the marketing of local rice in Senegal The commodity, which is usually sold on markets in northern Senegal, (river valley and Louga region) is increasingly present in other regions (Diourbel, Thiès, Tambacounda). The availability imported rice on markets has also improved compared to 2007. .

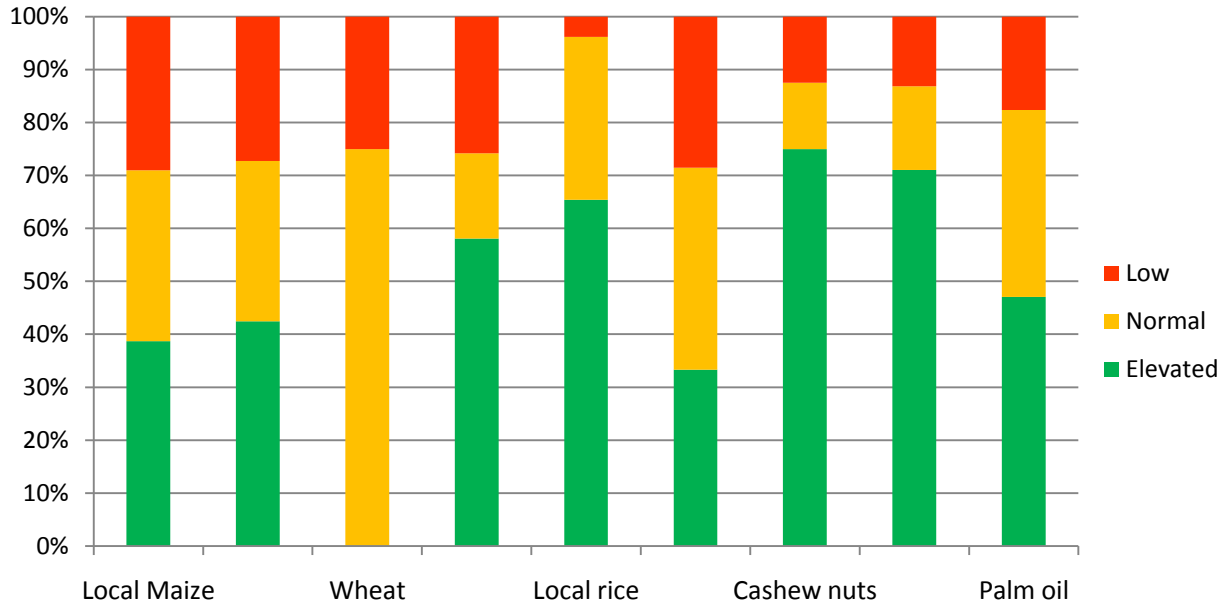
Figure 19 : Trends in paddy rice production in Senegal



Source : AFD (2009).

Availability is reported to have improved for cashew nuts, a crop whose production is surging in Senegambia and Guinea-Bissau. The young age of cashew plantations and the increase in planted areas suggests that production will continue to increase in coming years (MADR et al; 2007). Informants perceive that the availability of groundnuts has improved on more than half of the basin's markets. The situation is stable for local coarse grains. Wheat – a staple food in Mauritania – is the only commodity whose supply has deteriorated compared to 2007. Mauritanian authorities' interventions in the wheat business, which included wheat sales through fair-price stores, might have discouraged private traders from dealing in the commodity. Although it is not possible to entirely attribute improved food availability to policy interventions, it remains that the perception in the field is that of an increase in availability compared to 2007.

Figure 20: Perception of commodity availability compared to 2007.



Source: market questionnaires

Between 2007 and 2009, the western basin experienced shocks that have modified production and trade incentives. The high increase in commodity prices of 2008, followed by the global economic crisis, had an impact on wholesaler margins and transacted volumes in sectors. Many wholesalers dropped out of the commodity business, which reinforces the concentrated nature of the sector, already mentioned in Faivre Dupergue *et al.* (2008). Confirming the strong influence of commercial networks, few traders chose to modify their sourcing arrangements. A few wholesalers and collectors have nonetheless fallen back onto local supply chains due to the higher cost of transportation. The crisis in Guinea threatens the viability of the trade flow emanating from the forest zone, affecting incomes and food access for Guinean cash crop producers. The south-to-north trade route for forest products could shift east in order to avoid the risk of transiting through Guinean territory. The improvement in local rice availability raises the hope that a more favorable balance between local and international sources in the basin's food supply can be achieved.

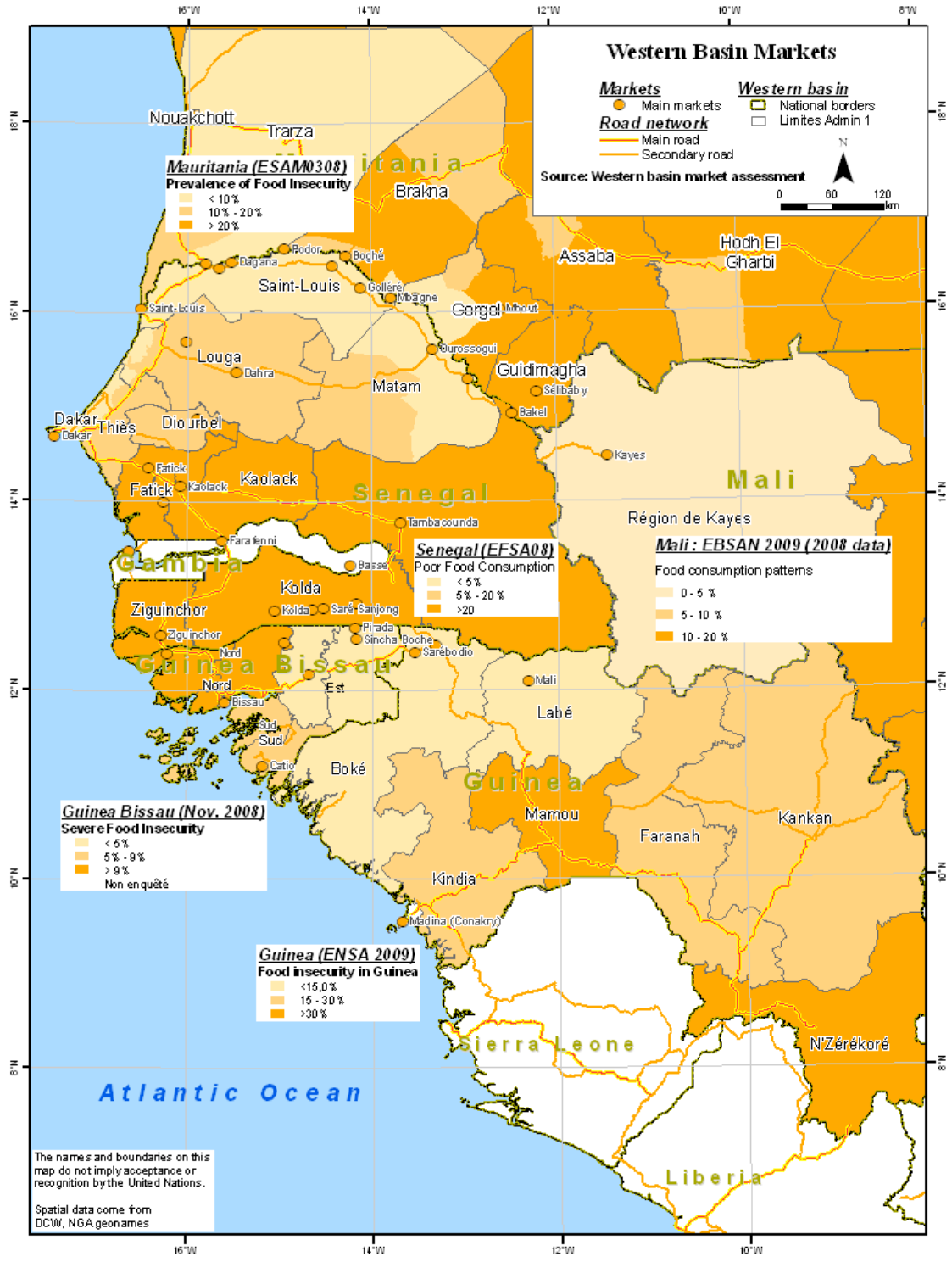
4.4 Markets and food security in the western basin

Households in the western basin depend on markets to buy grains, either entirely (in the case of pastoral and urban households) or partially (in the case of cash crop producers and agro-pastoralists). Rural households also depend on markets to sell their crops and to generate income. As such, markets are an essential mechanism for household food security. Overall, markets are integrated in the region, which contributes to price stability and sustains regional trade. However, some features of the trading system can work against household food security, especially at times of crisis.

Namely, the analysis presented in the document has brought to light dichotomies in market performance in the basin. A first dichotomy exists between local and imported market chains, the former being highly integrated, concentrated and responsive when times are good, but also incorporating deep-rooted asymmetries between buyers and sellers. The increase in rice prices in 2008 revealed the system's weakness, which allowed the pass through of high rice prices to the entire basin (many 'lagging' markets, in the Granger sense) when price regulation measures failed to contain price increases. The market chain for local cereals is less concentrated, but suffers from low capacity due to constraints for producers and traders. A second dichotomy emerges between markets in central areas of the basin (urban coastal areas) and peripheral markets. Central markets, which are closely linked to each other and to the international market, have the capacity to meet the needs of consumers. Markets in the hinterland, frequently isolated and underequipped in infrastructure, are less efficient, penalizing vulnerable, market-dependent producer and consumer households.

This dichotomy in market performance overlaps with a dichotomy in the geographic distribution of household food insecurity. Map10, presenting the prevalence of food insecurity in the western basin, shows that the phenomenon is more widespread in the basin's hinterland, in areas where cross-border trade flows originate. .Indeed, the areas most vulnerable to food insecurity include the groundnut basin and Casamance in Senegal, northwestern Guinea-Bissau. These rural areas subsist on the groundnut and cashew trades, both oligopsonic businesses with close links to the international market. A high prevalence of food insecurity is also noted in the upper Senegal river valley and in the Mauritanian Aftout, fragile agro-economic areas that are far from the coast and its markets, and where incomes are highly dependent on remittances. In urban coastal areas, food insecurity does exists, but affects a smaller share of the overall population than in more remote rural areas.

Map 10 : Prevalence of food insecurity among households in the western basin



Currently, market performance allows for the availability of basic commodities to the basin's consumers, but does not prevent shocks arising from local production deficits, international price changes, or exchange rate variations. However, in the medium to the long-term, the lack of competition, the existence of superfluous actors on market chains, the dependency on food imports and the existence of a group of national currencies are

factors limiting the viability of specific market chains and reducing investment opportunities in the agriculture and livestock sectors. Added to the continued liberalization of markets and the delays in regional integration, this situation could slow progress made in ensuring food availability and household food access in the basin.

Highlights : trade flows and potentialities

- The increase in food prices and the global crisis have reduced wholesaler margins. Exchange rate trends have affected competitive balances in the basin, limiting the competitiveness of Gambian and Mauritanian exports to the CFA zone.
- The crisis and poor security environment in Guinea, which disrupted the south to north trade in tropical products; has undermined the income and food security of cash crop producers in the Forest area.
- The improvement of food availability, especially in local rice, is indicative of opportunities emerging in a changing context.

5. Conclusions and Recommendations

5. 1 Conclusions

The western basin hosts long-distance trade flows that support household's livelihoods and food security. The palm oil, livestock, cashew nut and groundnut trades are income-earning opportunities that allow households to strengthen their food security and face shocks. These cross-border flows take place so as to meet urban demand on the coast, and specifically that of the Dakar-Touba area. Such trade flows transit through border markets such as Diaobé. Tracking prices and volumes on such markets will provide information relevant to livelihood performance and household food access in the basin. .

The sectors that rely on the international market – imported rice and cashew nuts – are highly concentrated, a risk to consumers and producers alike. The pervasive influence of commercial networks in the wholesale trade causes barriers to market entry and exit. The close social link between retailers and consumers contributes to food security: the widespread practice of credit sales, including to very poor households, supports food access, including at times of crisis. Markets possess a strong response capacity, especially for imported commodities. The markets in Dakar and Touba (Senegal) and Basse Santa Su (Gambia) act as leading markets in the basin for imported rice. Kaolack (Senegal) is the leading market for millet. The markets in the basin's periphery –and in troubled Guinea – seem less well anchored to the core of the system.

The food price increases of 2008 and the global crisis reduced transacted volumes and trading margins, and have exacerbated the oligopolistic character of the wholesale trade. By disrupting the trade in tropical products toward Touba, the crisis in Guinea has undermined livelihood systems in the forest area. The market is evolving, as attested by the increased availability of local cereals, especially rice. For better or worse, public policies have influenced the performance of cross-border flows, with evident consequences on food security.

The study has identified risks and opportunities to food security, shown in Table 21., that will have to be monitored to understand trends in households food security. The fact that many trade flows cross borders (such as livestock, palm oil, coarse grains and groundnuts) suggests that their development will continue to influence food security for vulnerable households.

Table 21 : Risks and opportunities for food security.

Risk or opportunity	Impact	Current situation
Reduction in the trade in products from the forest zone	Reduction of cash crop producer's incomes	Political instability in Guinea Fewer cash crops from the forest are reaching markets in southern Senegal
Devaluation of the CFA franc	Reduction in cattle and cash crop exports to Senegal from countries outside the CFA zone	The CFA franc is pegged to the Euro
Increase of the value of the ouguiya and dalasi against the CFA franc	Reduction in income for Mauritanian pastoralists and agro-pastoralists, and Gambian groundnut producers	The ouguiya and dalasi have tended to stregthen against the CFA franc since 2007.
Economic shock in Senegal	Lower terms of trade for pastoralists and cash crop producers	Senegal's economy is growing
Strong urban demand in the western basin	Increased market opportunities for food producers	Urban demand is attracting long-distance trade flows
Integration between the palm oil and fuel markets	Increased producer prices for palm oil	Indirect and partial pass through of international prices to the West African local palm oil market
Cashew nut boom in southern Senegambia and Guinea-Bissau	Increased incomes for smallholders before the lean-season. Risks associated with a monoculture.	Expansion of cashew nut production in Gambia, Senegal and Guinea

These conclusions allow the identification of factors relevant to food security at the country level:

- **Gambia**. The country's markets are integrated to others in the western basin, and especially that of neighboring Senegal. A drop in coarse grain production in Gambia can be felt in markets in Senegal. The market in Basse Santa Su influences imported rice prices in southern and eastern Senegal. The Senegalese

market also absorbs some of Gambia's groundnut production. A poor groundnut marketing season in Senegal could have an impact on Gambian farmer incomes. In that sense, the continuing appreciation of the dalasi against the CFA franc could reduce the competitiveness of Gambian food producers. Due to its weak domestic production, the country is vulnerable to disruptions to the international market.

- **Guinea-Bissau**. The export of palm oil and other food commodities to Senegal (groundnuts, sweet potato) makes the country dependent on its neighbor's economic fortunes. To a certain extent, the disruption of Guinea's trade with Senegal could be an opportunity for Guinea-Bissau's producers, who could try to increase their market share. However, Guinea-Bissau is itself confronted with an inadequate infrastructure, poor competitiveness and a limited forest production potential. Cashew exports through the port of Banjul will be monitored, a trade flow that will increase if the capacity of the port of Bissau are not resolved. The country's high dependency on rice imports makes it vulnerable to changes in the commodity's price. The cashew/rice ratio will continue to express rural Bissau-Guinean household's lean season food access.

- **Guinea**. The export of tropical products to markets in the north is an opportunity for cash crop producers in the Forest area. The country's recent instability had raised the possibility that Guinea might lose regional market share to Côte d'Ivoire, Mali or even Guinea-Bissau. The improvement of the security environment in Guinea is a prerequisite for the reestablishment of cross-border trade that would create durable opportunities for the country's cash crop producers. An increase in rice imports is noted in Guinea, making urban and rural groups' food security dependent on the trade.

- **Mali**. Western Mali is a coarse grain supply source for southern Mauritania and eastern Senegal. Should a production shock occur in Mali, cereal markets in Mauritania and Senegal would be affected. The livestock sector in Mali meets demand in Senegal; Gambia and Guinea. The Malian livestock market's success also benefits Mauritania, as some Mauritanian livestock exports transit through Mali. The livestock trade also supports agro-pastoral household' coping strategies. An economic shock in Senegal could reduce economic opportunities for Malian herders. Due to its low level of dependence in rice imports, and a high rice-growing potential, Mali is less exposed than its coastal neighbors to variations in rice prices.

- **Mauritania**. The study emphasizes the opportunity for food security that small ruminant exports to Senegal constitute. A disruption to the trade – by a devaluation of the CFA franc that would reduce Senegalese demand – would lead to a decline in incomes for Mauritanian herders by depressing cattle prices. The ouguiya has been strengthening against the CFA franc since 2006, which reduces the viability of the sheep trade to Senegal, faced with stiff competition from Mali. The river valley area benefits from coarse grain flows from the groundnut basin (Senegal and Gambia). A reduction in agricultural production in the groundnut basin would cause an increase in coarse grain prices in Mauritania. A production shock in western Mali would have similar consequences.

- **Senegal**. Cross-border trade is an opportunity for consumers. Traders have set up trading strategies at the regional level to meet Senegal's high demand. Dakar is a leading market in the basin for imported rice, and usually functions efficiently. The existence of long-distance flows in tropical products from the Forest zone and grain flows from the groundnut basin and the east support household food access. The performance of the groundnut sector in Senegal is relevant to the food security of groundnut farmers in Senegal, but also in Gambia and Guinea Bissau for whom Senegal is a key market. For The ability to use the port across the border in Banjul is an important strategy for Senegalese cashew nut producers in the Sine Saloum and Casamance. If sustained, the increase in local rice production could lead to a reduction in import dependency.

5.2 Recommendations

Although some of the issues brought to light above call for systemic policy action, authors have chosen to present recommendations that focus on operational issues lying within the respective mandates of the institutions participating in the study.

Specifically, conclusions presented in this document should be taken into account to improve national early warning systems. Similarly, contacts with wholesalers could be useful in view of assessing capacity for local or regional food procurement activities in the basin. The extension of activities to Sierra Leone and Liberia is necessary to complete the analysis made of agricultural trade and food security in the western basin. The recommendations presented below were developed at a validation meeting held in Dakar on March 8, 2010, attended by CILSS, FAO, FEWS NET and WFP.

Table 22 : Recommandation summary

Measure	Advantage	Comment on cost
Monitor 'leading' markets identified in the study - Dakar, Touba and Basse Santa Su for imported rice, Kaolack for millet). Monitor the exchange rate of the dalasi, ouguiya, and Guinean franc aganst the CFA franc	Increased relevance of analysis produced by national early warning systems.	None
Update the list of monitored markets with new 'emerging' markets	Market analysis focuses on new dynamics.	To be determined, price data collection can cost some USD 1,000 per market annually.
Improve monitoring of cash crop prices (palm oil, groundnuts, cashew nuts, cowpeas)	Improved livelihoods analysis.	Such monitoring can be integrated to existing data collection systems
Set up a system monitoring cross-border trade in the basin	Increased relevance of analysis produced by national early warning systems.	Would be based on data currently disseminated through WAMIS
Creation of strengthening livestock MIS in the western basin, namely Mali, Mauritania, and Senegal.	Improved availability of information on livestock	Learn from the experience of the functional livestock MIS in Niger
Improve capacities at MISs, especially in Guinea-Bissau, Guinea and Mauritania.	Market information is available on a greater number of markets.	To be defined.
Evaluate the capacity of wholesalers to respond to local or regional food purchases in the basin	Improved decision making should the need arise	Some 5,000 USD
Undertake similar analysis for the southern part of the basin (Sierra Leone and Liberia)	Baseline information is also available for those countries	Some 30,000 USD

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Annex 1 : List of markets included in the study

Number	Market name	Admin 2	Country
1	Nouakchott	Nouakchott	Mauritania
2	Sélibaby	Guidimakha	Mauritania
3	Mbout	Gorgol	Mauritania
4	Kaédi	Gorgol	Mauritania
5	Boghé	Brakna	Mauritania
6	Lexeiba	Trarza	Mauritania
7	Rosso	Trarza	Mauritania
8	Keur Macène	Trarza	Mauritania
9	Mbagne	Brakna	Mauritania
10	Djoungountoro	Guidimakha	Mauritania
11	Dodel	Saint Louis	Senegal
12	Ourossogui	Matam	Senegal
13	Orkadiéré	Matam	Senegal
14	Golléré	Matam	Senegal
15	Dagana	Saint Louis	Senegal
16	Richard Toll	Saint Louis	Senegal
17	Saint Louis	Saint Louis	Senegal
18	Dahra	Louga	Senegal
19	Gouille Mbeuth	Louga	Senegal
20	Podor	Saint Loui	Senegal
21	Passy	Fatick	Senegal
22	Fatick	Fatick	Senegal
23	Banjul	Banjul	Gambia
24	Farafenni	North Bank	Gambia
25	Basse	Upper River	Gambia
26	Tambacounda	Tambacounda	Senegal
27	Bakel	Matam	Senegal
28	Kayes	Kayes	Senegal
29	Dakar	Dakar	Senegal
30	Ziguinchor	Ziguinchor	Senegal
31	Kolda	Kolda	Senegal
32	Bagadadji	Kolda	Senegal
33	Saré Sanjong	Kolda	Senegal
34	Diaobé	Kolda	Senegal
35	Cambadju	Bafata	Guinea-Bissau
36	Pirada	Gabu	Guinea-Bissau
37	Sao Domingos	Cacheu	Guinea-Bissau
38	Bafata	Bafata	Guinea-Bissau
39	Bissau Bandim	SAB	Guinea-Bissau
40	Catio	Tombali	Guinea-Bissau
41	Sintcham Botché	Gabu	Guinea-Bissau

42	Madina	Conakry	Guinea
43	Koundara	Boké	Guinea
44	Mali	Labé	Guinea
45	Sarébodio	Boké	Guinea

Annexe 2 : Granger causality test

Rice import market Granger causality test

Country	Market	% times a market Granger-causes another	% times a market Granger-causes another
Senegal	Bakel	6%	0%
	Dagana	24%	6%
	Dakar	29%	41%
	Diaobé	12%	53%
	Kaolack	18%	18%
	Kolda	24%	18%
	Saint-Louis	18%	24%
	Tambacounda	12%	18%
	Touba	24%	6%
	Ziguinchor	24%	24%
Gambia	Banjul	12%	0%
	Farafenni	6%	6%
	Basse	18%	0%
Guinea	Conakry	6%	12%
Guinea-Bissau	Bissau	18%	18%
Mali	Kayes	24%	24%
Mauritania	Nouakchott	18%	24%

Source : MIS, FEWS NET, WFP.

Rice market Granger causality test

Country	Market	Cause/Influence (à 5%)	Markets caused	Number of times a market causes another	Number of times the market is caused by another
SENEGAL	BAKEL	→	Saint-Louis	1	0
	DAGANA	→	Bissau, Kayes, Kolda, Touba	4	1
	DAKAR		Conakry, Diaobe*, Saint-Louis*, Tambacounda*, Ziguinchor*	5	7
	DIAOBE	→	Dakar, Nouakchott*	2	9
	FARAFENNI	→	Diaobe	1	1
	KAOLACK	→	Dakar*, Diaobe*, Nouakchott	3	3
	KOLDA	→	Kaolack, Kayes*, Nouakchott, Tambacounda	4	3
	SAINT-LOUIS	→	Kayes*, Kolda*, Nouakchott	3	4
	TAMBACOUNDA	→	Diaobe, Ziguinchor*	2	3
	TOUBA	→	Bissau, Dakar, Kaolack*, Tambacounda	4	1
	ZIGUINCHOR	→	Dagana, Dakar*, Kayes*, Kolda*	4	4
GAMBIA	BANJUL	→	Dakar, Diaobe	2	0
	BASSE	→	Dakar, Diaobe, Ziguinchor	3	0
GUINEE	CONAKRY	→	Farafenni*	1	2
GUINEE BISSAU	BISSAU	→	Diaobe, Kaolack, Saint-Louis*	3	3
MALI	KAYES	→	Bissau, Dakar, Diaobe*, Ziguinchor*	4	4
MAURITANIA	NOUAKCHOTT	→	Conakry, Diaobe, Saint-Louis	3	4

(*) Influence at 2% based on 30 observations or above

Pairwise Granger Causality Tests

Sample: 2001M01 2009M12

Lags : 2

Null Hypothesis : (rejected)	Observations	F-Statistic	Probability
BAKEL does not Granger Cause SAINTLOUIS	12	5.92731	0.03118
BANJUL does not Granger Cause DAKAR	26	4.49227	0.02376
BANJUL does not Granger Cause DIAOBE	9	20.6995	0.00776
BASSE does not Granger Cause DAKAR	26	6.22189	0.00755
BASSE does not Granger Cause DIAOBE	9	25.2716	0.00538
BASSE does not Granger Cause ZIGUINCHOR	27	3.44549	0.04992
BISSAU does not Granger Cause DIAOBE	9	11.6576	0.02144
BISSAU does not Granger Cause KAOLACK	27	5.29293	0.01328
BISSAU does not Granger Cause SAINTLOUIS	42	9.76176	0.00039
CONAKRY does not Granger Cause FARAFENNI	33	4.87791	0.01522
DAGANA does not Granger Cause BISSAU	20	8.79342	0.00297
DAGANA does not Granger Cause KAYES	23	27.4986	3.40E-06
DAGANA does not Granger Cause KOLDA	26	10.9283	0.00056
DAGANA does not Granger Cause TOUBA	19	16.3697	0.00022
DAKAR does not Granger Cause CONAKRY	62	3.68366	0.03129
DAKAR does not Granger Cause DIAOBE	39	25.9127	1.50E-07
DAKAR does not Granger Cause SAINTLOUIS	83	6.85828	0.0018
DAKAR does not Granger Cause TAMBACOUNDA	50	6.61516	0.00303
DAKAR does not Granger Cause ZIGUINCHOR	82	10.7985	7.30E-05
DIAOBE does not Granger Cause DAKAR	39	3.71994	0.0346
DIAOBE does not Granger Cause NOUAKCHOTT	32	6.345	0.00551
FARAFENNI does not Granger Cause DIAOBE	9	7.84515	0.04127
KAOLACK does not Granger Cause DAKAR	75	17.1877	8.50E-07

KAOLACK does not Granger Cause DIAOBE	39	9.82038	0.00043
KAOLACK does not Granger Cause NOUAKCHOTT	60	3.67019	0.0319
KAYES does not Granger Cause BISSAU	40	3.37064	0.04584
KAYES does not Granger Cause DAKAR	87	3.11117	0.04985
KAYES does not Granger Cause DIAOBE	33	8.648	0.00119
KAYES does not Granger Cause ZIGUINCHOR	76	9.98023	0.00015
KOLDA does not Granger Cause KAOLACK	64	3.77922	0.02855
KOLDA does not Granger Cause KAYES	72	6.08034	0.00374
KOLDA does not Granger Cause NOUAKCHOTT	65	3.1835	0.04853
KOLDA does not Granger Cause TAMBACOUNDA	42	3.73401	0.03333
NOUAKCHOTT does not Granger Cause CONAKRY	48	3.36305	0.04395
NOUAKCHOTT does not Granger Cause DIAOBE	32	3.50636	0.04428
NOUAKCHOTT does not Granger Cause SAINTLOUIS	69	3.93533	0.02444
SAINTLOUIS does not Granger Cause KAYES	82	6.57497	0.00231
SAINTLOUIS does not Granger Cause KOLDA	70	4.24776	0.01846
SAINTLOUIS does not Granger Cause NOUAKCHOTT	69	3.41702	0.03891
TAMBACOUNDA does not Granger Cause DIAOBE	19	5.06972	0.02207
TAMBACOUNDA does not Granger Cause ZIGUINCHOR	50	4.89228	0.01195
TOUBA does not Granger Cause BISSAU	24	4.88728	0.01939
TOUBA does not Granger Cause DAKAR	62	3.95128	0.02472
TOUBA does not Granger Cause KAOLACK	62	5.25554	0.00804
TOUBA does not Granger Cause TAMBACOUNDA	31	3.83901	0.03461
ZIGUINCHOR does not Granger Cause DAGANA	26	6.17554	0.00777
ZIGUINCHOR does not Granger Cause DAKAR	82	7.33277	0.00122
ZIGUINCHOR does not Granger Cause KAYES	76	29.3401	5.20E-10
ZIGUINCHOR does not Granger Cause KOLDA	70	5.60484	0.00568

Millet market: Granger causality test

Country	Market	% times a market Granger-causes another	% times a market Granger-causes another
Senegal	Dagana	23%	38%
	Dakar	31%	0%
	Diaobé	23%	8%
	Kaolack	54%	0%
	Kolda	23%	8%
	Saint-Louis	38%	15%
	Tambacounda	15%	23%
	Touba	15%	31%
	Ziguinchor	23%	54%
Gambia	Banjul	15%	8%
	Farafenni		
	Basse	15%	38%
Guinea-Bissau	Bissau		
Mali	Kayes	0%	46%
Mauritania	Nouakchott	0%	8%

Source : données SIM, FEWS-NET, PAM.

Marchés du mil dans le bassin Ouest : tests de causalité de Granger

Country	Market	Causes/Influences (5%)	Markets caused	Number of times a market causes another	Number of times the market is caused by another
SENEGAL	BAKEL	→	Nouakchott	1	5
	DAGANA	→	Ziguinchor*	1	5
	DAKAR	→	Bakel, Dagana*, Kayes, Tambacounda*, Ziguinchor*	5	1
	DIAOBE	→	Dagana, Saint-Louis*, Ziguinchor*	3	1
	FARAFENNI	→	Saint-Louis*, Touba	2	1
	KAOLACK	→	Bakel*, Dagana*, Kayes*, Kolda*, Saint-Louis*, Tambacounda*, Touba*, Ziguinchor*	8	0
	KOLDA	→	Basse, Diaobe*, Kayes*, Ziguinchor	4	3
	SAINT-LOUIS	→	Bakel, Kayes*, Nouakchott*, Tambacounda*, Touba*, Ziguinchor	6	4
	TAMBACOUNDA	→	Bakel*, Dagana*, Kayes*, Kolda	4	3
	TOUBA	→	Dagana*, Dakar, Ziguinchor*	3	5
	ZIGUINCHOR	→	Bakel*, Basse, Kayes*, Saint-Louis, Touba*	5	7
GAMBIA	BANJUL	→	Basse, Bissau	2	0
	BASSE	→	Farafenni, Touba	2	4
GUINEE-BISSAU	BISSAU	→	Basse	1	1
MALI	KAYES	→	Kolda	1	6
MAURITANIA	NOUAKCHOTT	→		0	2

(*) Influence à 2% basée sur 30 observations et plus

Pairwise Granger Causality Tests

Sample: 2002M01 2009M11

Lags : 2

Null Hypothesis : (rejected)	Observations	F-Statistic	Probability
BAKEL does not Granger Cause NOUAKCHOTT	34	3.79253	0.03442
BANJUL does not Granger Cause BASSE	32	4.08366	0.02822
BANJUL does not Granger Cause BISSAU	24	3.9274	0.03736
BASSE does not Granger Cause FARAFENNI	29	6.27687	0.00642
BASSE does not Granger Cause TOUBA	25	8.69791	0.00191
BISSAU does not Granger Cause BASSE	19	5.1719	0.02081
DAGANA does not Granger Cause ZIGUINCHOR	57	8.20627	0.0008
DAKAR does not Granger Cause BAKEL	34	4.25381	0.02399
DAKAR does not Granger Cause DAGANA	53	4.57309	0.01521
DAKAR does not Granger Cause KAYES	65	3.57659	0.03408
DAKAR does not Granger Cause TAMBACOUNDA	69	6.8694	0.00198
DAKAR does not Granger Cause ZIGUINCHOR	69	4.79618	0.01146
DIAOBE does not Granger Cause DAGANA	31	3.7596	0.0368
DIAOBE does not Granger Cause SAINTLOUIS	44	4.70138	0.01482
DIAOBE does not Granger Cause ZIGUINCHOR	44	5.39373	0.00855
FARAFENNI does not Granger Cause SAINTLOUIS	31	4.8116	0.01668
FARAFENNI does not Granger Cause TOUBA	25	6.14535	0.00831
KAOLACK does not Granger Cause BAKEL	34	7.3207	0.00267
KAOLACK does not Granger Cause DAGANA	57	10.5105	0.00015
KAOLACK does not Granger Cause KAYES	73	5.74122	0.00497
KAOLACK does not Granger Cause KOLDA	69	7.03054	0.00174
KAOLACK does not Granger Cause SAINTLOUIS	77	10.2525	0.00012
KAOLACK does not Granger Cause TAMBACOUNDA	77	18.3824	3.60E-07
KAOLACK does not Granger Cause TOUBA	69	5.31922	0.00729

KAOLACK does not Granger Cause ZIGUINCHOR	77	21.4426	4.90E-08
KAYES does not Granger Cause KOLDA	78	3.17101	0.0478
KOLDA does not Granger Cause BASSE	32	4.35128	0.02301
KOLDA does not Granger Cause DIAOBE	44	7.34754	0.00196
KOLDA does not Granger Cause KAYES	78	5.90708	0.00419
KOLDA does not Granger Cause ZIGUINCHOR	69	3.23907	0.04571
SAINTLOUIS does not Granger Cause BAKEL	39	3.59158	0.03845
SAINTLOUIS does not Granger Cause KAYES	86	8.92811	0.00031
SAINTLOUIS does not Granger Cause NOUAKCHOTT	61	5.10228	0.00921
SAINTLOUIS does not Granger Cause TAMBACOUNDA	77	4.38703	0.01593
SAINTLOUIS does not Granger Cause TOUBA	69	5.79728	0.00485
SAINTLOUIS does not Granger Cause ZIGUINCHOR	77	3.54297	0.03407
TAMBACOUNDA does not Granger Cause BAKEL	34	6.99427	0.00332
TAMBACOUNDA does not Granger Cause DAGANA	57	4.57782	0.01475
TAMBACOUNDA does not Granger Cause KAYES	73	9.8377	0.00018
TAMBACOUNDA does not Granger Cause KOLDA	69	4.16029	0.02002
TOUBA does not Granger Cause DAGANA	53	9.77377	0.00027
TOUBA does not Granger Cause DAKAR	69	3.87566	0.02578
TOUBA does not Granger Cause ZIGUINCHOR	69	8.62657	0.00048
ZIGUINCHOR does not Granger Cause BAKEL	34	6.2015	0.00573
ZIGUINCHOR does not Granger Cause BASSE	25	5.53727	0.0122
ZIGUINCHOR does not Granger Cause KAYES	73	14.3907	6.10E-06
ZIGUINCHOR does not Granger Cause SAINTLOUIS	77	3.38427	0.03938
ZIGUINCHOR does not Granger Cause TOUBA	69	4.62205	0.01334

Annexe 3: Intenational price shocks

Senegal is a net rice importer. As such, the country is exposed to the effects of international price shocks. In order to evaluate domestic market's to exogenous price shocks , impulse response functions were estimated from a vector autoregressive model (VAR1). Overall, prices experience various shocks that cause price deviations from the long term trend. Impulse response functions allow the assessment of the response to a shock equivalent to a standard deviation of a price change on the main market. They determine the nature of a shock, its magnitude and its length, i.e. the period of time before prices return to their long-term trend.

The price series used are represented by the D in front of each market name. The variable PRIXINT represents the international price of rice FOB Bangkok(Thai A1 Super 100% broken). The price series are in kg and are expressed in CFA francs. Moreover, the prices used on the western basin markets are retail prices.

A positive price shock of one standard deviation of their long-term value has an instant positive impact (meaning that prices increase, as shown when the blue line starts above zero) on the markets of Kayes, Kaolack and Saint Louis. The same shock leads to a reaction delayed by a month in Dakar, Tambacounda and Touba, whereas the delay lasts two months in Diaobé. Dakar is the main entry port for rice, and is also the market where the shock dissipate most rapidly . Indeed, prices in Dakar recover their long term level after 8 months, whereas the process takes 9 to 12 months on other markets .

Overall, in the western basin, Dakar is the most efficient market for imported rice as prices recover their long-term level in a relatively short period of time. The markets that are the most open to the international market are Dakar and Saint Louis, as 42% of the international price shock is passed through to these markets (Table 21).

Table 21: effects of an international price shock on markets of the western basin

	Dakar	Diaobe	Tambacounda	Touba	Kaolack	Saint Louis	Kayes
Reaction to the shock	Delayed by a month	Delayed by two months	Delayed by a month	Delayed by a month	Instant	Instant	Instant
Size of the shock passed through	42%	21%	33%	25%	17%	42%	17%
Duration of the shock	8 months	9 months	12 months	10 months	12 months	10 months	10 months