



Lake Chad Basin Crisis

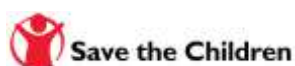
Regional Market Assessment

June 2016

Data collected January – February 2016



ACTED



Food and Agriculture Organization
of the United Nations



World Food Programme

Acknowledgments

This study was prepared by Stephanie Brunelin and Simon Renk. Primary data was collected in collaboration with ACF and other partners, under the overall supervision of Simon Renk. Acknowledgments go to Abdoulaye Ndiaye for the maps and to William Olander for cleaning the survey data. The mission wishes to acknowledge valuable contributions made by various colleagues in WFP country office Chad and WFP Regional Bureau Dakar. Special thanks to Cecile Barriere, Yannick Pouchalan, Maggie Holmesheoran, Patrick David, Barbara Frattaruolo, Ibrahim Laouali, Mohamed Sylla, Kewe Kane, Francis Njilie, Analee Pepper, Matthieu Tockert for their detailed and useful comments on earlier versions of the report. The report has also benefitted from the discussions with Marlies Lensink, Malick Ndiaye and Salifou Sanda Ousmane. Finally, sincere appreciation goes to the enumerators, traders and shop-owners for collecting and providing information during the survey.

Acronyms

ACF	Action Contre la Faim
ACLED	Armed Conflict Location and Event Data Project
FAO	Food and Agriculture Organization
FEWS NET	Famine Early Warning System Network
GDP	Gross Domestic Product
GPI	Gender Parity Index
IDP	Internally Displaced People
IFC	International Finance Corporation
IMF	International Monetary Fund
IOM	International Organization for Migration
MT	Metric Ton
NAMIS	Nigeria Agricultural Market Information Service
OHCHR	Office of the United Nations High Commissioner for Human Rights
UNESCO	United Nations Educational, Scientific and Cultural Organization
USDA	U.S. Department of Agriculture
WFP	World Food Programme

Table of Content

Acknowledgments	2
Acronyms	2
Table of Content.....	3
List of figures and tables	4
Executive summary	6
1. Introduction.....	8
2. Methodology and limits	8
3. Context.....	9
4. Food availability	13
5. Trader characteristics	14
6. Trade flows and market access	18
7. Supply chain.....	22
7.1. Changes in supply sources.....	22
7.2. Strategies to cope with price increases or supply problems	22
8. Price	23
8.1. Price level and price volatility	23
8.2. Price seasonality	28
9. Volumes	29
10. Response capacity.....	30
11. Main constraints.....	34
12. Stock strategy.....	36
13. Source of funding and credit access.....	38
14. Concluding remarks and suggestions.....	40
Bibliographie	42
Annex A: Additional tables and figures	43
Annex B: Decision making process	55
Annex C: Limits and suggestions for improving questionnaire design	58

List of figures and tables

Figure 1: Violent activity by type in North Nigeria (Yobe, Adawama and Borno).....	10
Map 1: Number of conflict related fatalities between 2010 and 2015	12
Figure 2: Calendar of a typical cereal marketing year in the Sahel	13
Figure 3: Gender of customers	15
Figure 4: Traders' age by gender	16
Figure 5: Traders' age by type of traders	16
Figure 6: Level of education among traders.....	17
Map 2: Trade flows of cereals – January 2016	19
Figure 7: Share of traders who change the source of supply of their commodities since the start of their activity	22
Figure 8: Average retail prices of millet in Chad, Niger and Nigeria (CFAF/kg)	24
Figure 9: Millet price in CFAF/kg	24
Figure 10: Average retail prices of sorghum in Chad, Niger and Nigeria (CFAF/kg)	25
Figure 11: Sorghum price in CFAF/kg	25
Figure 12: Maize price in CFAF/kg	26
Figure 13: Average retail prices of maize in Chad, Niger, Cameroon and Nigeria (CFA/kg) ..	27
Figure 14: Average retail prices of rice in Chad, Niger, Cameroon and Nigeria (CFAF/kg) ..	27
Figure 15: Prices of imported rice in CFAF/kg.....	28
Figure 16: Seasonal pattern of cereals (2008-2015, CFAF/KG).....	29
Figure 17: Response capacity to a 100 percent increase in demand	31
Figure 18: Response capacity to a 100 percent increase in demand in Cameroon	32
Figure 19: Response capacity to a 100 percent increase in demand in Chad.....	32
Figure 20: Response capacity to a 100 percent increase in demand in Niger	33
Figure 21: Response capacity to a 100 percent increase in demand in Nigeria	34
Figure 22: First constraint faced by transporters (%).....	36
Figure 23: Time of the year when traders experience stockout	37
Figure 24: Main source of funding for traders by gender	39
Figure A1: Number of reported fatalities by region.....	43
Figure A2a: Maize production (1000 MT).....	44
Figure A2b : Millet production (1000 MT).....	44
Figure A2c : Milled rice production (1000 MT)	44
Figure A2d : Sorghum production (1000 MT).....	44
Figure A3a: Average number of customer per trader per week in Cameroon	45
Figure A3b: Average number of customer per trader per week in Chad	45
Figure A3c: Average number of customer per trader per week in Niger.....	46
Figure A3d: Average number of customer per trader per week in Nigeria.....	46

Figure A4a: Sum of weekly sale by market for respectively the main local and imported good in Cameroon (MT)	47
Figure A4b: Sum of weekly sale by market for respectively the main local and imported good in Chad (MT).....	47
Figure A4c: Sum of weekly sale by market for respectively the main local and imported good in Niger (MT).....	48
Figure A4d: Sum of weekly sale by market for respectively the main local and imported good in Nigeria (MT)	48
Table 1: Number of actors interviewed by country and region.....	9
Table 2: Traders' type by selling point*	14
Table 3: Food commodities sold by at least 30 percent of the traders	18
Table 4: Cities that are difficult to access by truck during the rainy season.....	20
Table 5: Market access.....	21
Table 6: Unusual strategies developed by traders to cope with price increase or supply problems	23
Table 7: Top 10 constraints faced by traders by gender (%).....	35
Table 8: Top 10 constraints faced by traders by trader's type (%)	35
Table 9: Share of wholesalers storing products from the previous campaign for reselling them later	37
Table 10: Average duration of grain storage in months during the 2014/15 campaign.....	38
Table 11: Share of traders selling products on credit (%).....	40
Table A1: Number of traders by type of trade	49
Table A2: Millet prices characteristics (01/2008-12/2015 in CFAF/kg)	51
Table A3: Sorghum prices characteristics (01/2008-12/2015 in CFAF/kg)	52
Table A4: Maize prices characteristics (01/2008-12/2015 in CFAF/kg).....	53
Table A5: Rice prices characteristics (01/2008-12/2015 in CFAF/kg).....	54
Table B1: Who decides whether you will take out credit to finance trade activities most of the time? (%).....	55
Table B2: Who decides how much of your generated income will be spent on food for your household most of the time?.....	55
Table B3: Who decides whether you will sell this product most of the time? (%) (For the main local product).....	56
Table B4: Who decides at what price you will sell this product most of the time? (%) (For the main local product.....	56
Table B5: Who decides from whom/where you will purchase this product most of the time? (%) (For the main local product	57
Table C1: Data quality issues when traders were asked to identify the main national product and the main imported product.....	59
Table C2: Number of transporters interviewed by country.....	60

Executive summary

Since 2012, the security situation in North Nigeria has dramatically worsened leading to massive displacement of population, not only within Nigeria but also in neighboring Cameroon, Chad and Niger. The ongoing conflict strongly affect food security in the northeast as people suffer from serious restrictions to their livelihood. Considering this situation, the WFP Regional Bureau for West Africa, in collaboration with ACF and other partners, launched a regional market assessment in the Lake Chad basin. This market assessment aims at addressing information needs to support the national and regional humanitarian response, and strengthen market baselines across the four countries.

The report relies on secondary data analysis, consultations with WFP, FAO, FEWS NET and National Early Warning Systems and Markets Information Systems and a primary data collection exercise through markets survey that covered 104 cities located in 10 regions and 4 countries around the Lake Chad Basin: Nigeria, Niger, Chad and Cameroon. The market assessment was conducted in January and February 2016 and the survey was administered to 1619 traders and 620 transporters.

The Boko Haram-related conflict in Northeast Nigeria is persisting. According to IOM (April 2016), 1,856,616 IDPs have been displaced by the insurgency and 92 percent of them are in Borno, Adamawa and Yobe, which are the three Nigerian states covered by the survey. In addition to the security situation, Nigeria faces economics challenges due to the drop in global oil prices and the depreciation of the naira that is likely to reduce the purchasing power of Nigerian traders for imported goods and cash crops from the Sahel.

Primary data shows that the place of women in agricultural trade varies between countries. Women account for almost half of the traders in Cameroon whereas female traders make up less than 20 percent of traders in the other countries. Overall, women are more likely to be retailers than wholesalers and are less likely to have employees.

The on-going conflict in North Nigeria has disrupted trade flows by forcing traders to change trade routes. Cross-border trade between Nigeria and Niger has been affected as transporters can no longer use the axis Damassack-Diffa because of security reasons. Cross-border flows between the two countries have moved to the west and the Gashua-Geidam-Maine Soroa axis has become a major cross-border trade route for traditional grains, maize and niebe.

Cross-border trade between Nigeria and Cameroon seems to have suffered from the conflict as well. Before the conflict, most traffic in north Cameroon flew along the corridor from Maiduguri to Kousseri or Maiduguri to Maroua. In the present survey, only one transporter out of 26 in Cameroon reported Nigeria as its main supply source of cereals suggesting that agricultural trade flows between Northeast Nigeria and North Cameroon have been reduced.

The transporters survey shows that transporters in North Nigeria face high transport costs and numerous checkpoints, especially in Borno state. While they are primarily intended to prevent the entry of undesirable individuals and the smuggling of illegal goods, they raise the cost of trucking and are likely to generate delays.

Despite these difficulties, most traders in Diffa (Niger), Borno and Yobe (Nigeria) and in Bahr El Gazal (Chad) estimate to have the capacity to respond quickly to a 100 percent increase in demand, should such a significant increase in demand be triggered by a cash and voucher programme. On the other hand, in the North region of Cameroon and in the Lac region of Chad, a large share of traders reported being unable of doubling their sales to meet an important increase in demand.

Most traders did not change their sources of supply since the start of their trading activities, suggesting that they managed to keep the same supply source in spite of the security crisis in North Nigeria. In Niger, traders seem reluctant to change suppliers even when they face supply difficulties, which is likely to reflect the role played by trader networks in Niger. An important share of traders rely on suppliers as their main sources of funding, confirming the role played by social networks in agricultural trade in Niger.

Lack of own capital is massively reported by traders as their first constraint followed by insecurity. Female traders seem to suffer more than male from the lack of capital and the lack of credit. Indeed, 67 percent of female traders reported lack of own capital as their main constraint compared to 44 percent of male traders, suggesting that women disproportionately face financial access barriers that prevent them from participating in the agricultural trade.

At transporter level, insecurity, harassment and poor road infrastructure are the main constraints reported on by transporters. In Chad and Nigeria, insecurity and harassment come first whereas Cameroonian and Nigerien transporters are more concerned by poor road infrastructure.

1. Introduction

Considering the recent humanitarian crisis and the increased displacement in the region, the Vulnerability Assessment and Mapping unit of the WFP Regional Bureau for West Africa, in collaboration with ACF and other partners (including National Early Warning Systems and Markets Information Systems), launched a regional market assessment in the Lake Chad basin. The assessment was conducted in ten regions in Chad, Niger, Nigeria and Cameroon, in the surrounding zones around the Lake Chad Basin.

The main objective is to address urgent information needs to support the national and regional humanitarian response, and strengthen market baselines across the four countries. The study assessed the market situation of the on-going crisis and subsequent market disruptions. The main focus was on cereals.

2. Methodology and limits

This assessment relies on secondary data analysis and primary data collection. Secondary data include price data collected by FEWS NET, National Early Warning Systems and Market Information Systems as well as political violence and protest data gathered by ACLED (Armed Conflict Location and Event Data Project). Primary data collection was undertaken from mid-January 2016 to mid-February 2016 in ten regions surrounding the Lake Chad basin¹ covering a total of 104 towns and villages (Table 1). Data collection tools include a market questionnaire, a trader questionnaire and a transporter questionnaire.

Enumerators collected data in 26 cities in Chad, 24 in Cameroon, 22 in Niger and 30 in Nigeria. On average, the traders' questionnaire was submitted to 14 traders by city in Chad and Cameroon, 7 in Niger and 19 in Nigeria when Maiduguri is not considered². The sample size varies between countries with Nigeria being the most represented country in the sample with 734 traders interviewed out of 1620 (Table 1). The city of Maiduguri, which is the capital of Borno state where the concentration of the armed opposition group is the highest, account for 10 percent of the overall sample and 23 percent of the Nigerian sample of traders.

The geographic choice for the primary data collection has been limited by the security situation that is still very unstable in North Nigeria. The traders' questionnaire was administered in only four cities in Borno state: Biu, Kwaya Kusar, Maiduguti and Sabon Kasuwa (Table A1) due to security reasons. The security situation in North Nigeria prevented enumerators to access many villages in Borno states.

Men are overrepresented in the sample. The share of women in both samples (traders and transporters) is low, with the exception of the sample in Cameroon where women accounts for

¹ The survey covered four regions in Chad including a region named Lac, which can be confusing with the Lake Chad basin. In the rest of the document, we refer to this specific region of Chad as the Lac region whereas we refers to the Lake basin as the Lake Chad basin.

² The traders' questionnaire was submitted to 169 traders in Maiduguri. Maiduguri has a special place in the survey as the city is the birthplace of Islamist group Boko Haram's insurgency.

48 percent of the traders, followed by Chad (23%), Nigeria (11%) and Niger (<1%). Women are almost entirely absent from the transportation sector as less than two percent of the surveyed transporters are female.

The small share of female traders in our sample does not necessarily reflect the true situation in the markets as the survey is not representative at market level. Having a representative sample of traders at village or market level is very challenging in developing countries where no information is available on the number and type of traders working on the market throughout the year. The sampling approach could be improved if the local authorities collecting market taxes had a record of the market actors present in the market each week.

Table 1: Number of actors interviewed by country and region

	Region	Number of towns surveyed	Traders		Transporters	
			Total	Female share (%)	Total	Female share (%)
Cameroon	Extreme Nord	20	296	44	22	5
	Nord	4	62	65	4	0
Nigeria	Adamawa	9	153	21	20	5
	Borno	4	243	16	45	4
	Yobe	17	338	2	60	2
Niger	Diffa	22	157	1	130	0
Chad	Lac	8	107	29	8	0
	Hadjer-Lamis	7	98	20	6	0
	Bahr El Gazal	6	83	17	6	0
	Kanem	5	82	23	5	0
Total		104	1619	21	306	2

Source : Trader and transporter surveys

3. Context

The Sahel is one of the regions most vulnerable to climate change and climate variability.

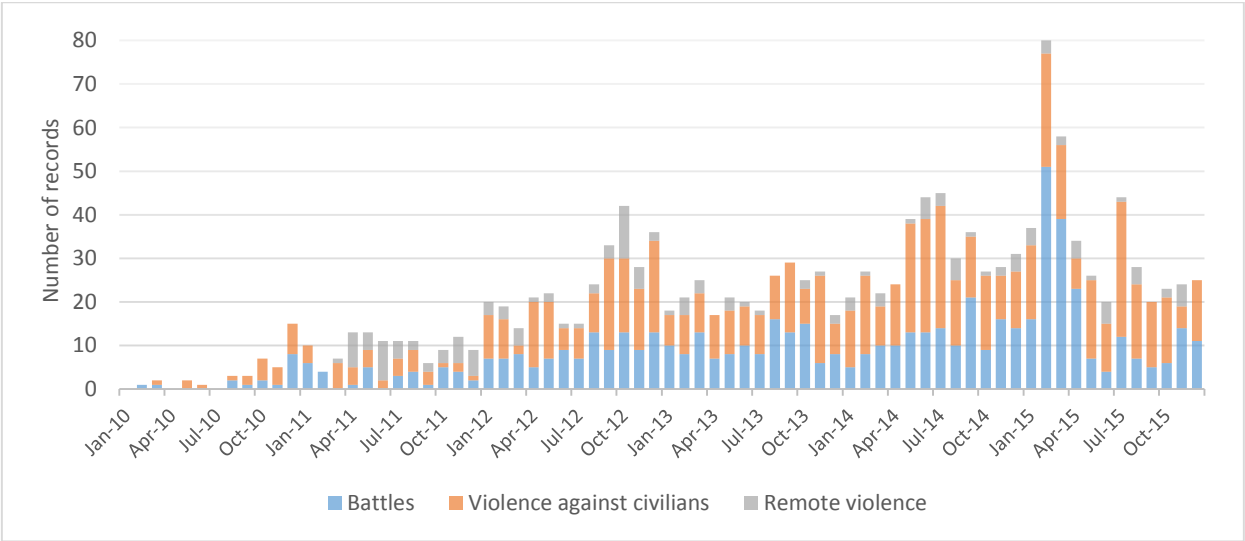
The Sahel region is highly vulnerable to climate shocks due its geographic location and the strong dependence of its population on agriculture and livestock. Agriculture is predominantly rainfed and depends on 3 to 4 months of rainfall. Although scientists have not reached a consensus about the impact of climate change on the Sahel, they agree that the Sahel is one of the most vulnerable regions in the world to climate change. In the last century, the Sahel experienced an unprecedented and severe long-lasting drought from the late 1960s to the beginning of the 1990s. Now, the succession of dry years and wet years has become a typical feature of the Sahelian climate. In fact, extreme years are so frequent that some analysts argue whether the notion of ‘normal rainfall’ is relevant in the context of the Sahel (Hulme, 2001). Droughts with varying degrees of severity occur in two out of every five years, making harvests

of the major food and cash crops highly uncertain (Kandji et al, 2006). Climate variability therefore poses one of the biggest obstacles to the achievement of food security in the region.

The security situation in the Lake Chad basin has deteriorated significantly since 2010 due to the Boko Haram conflict

The Sahel faces a number of security threats from terrorist groups. Since 2013, there has been a rise in the number of acts of violence in North Nigeria, targeting primarily the civilian population (Figure 1). In 2015, Boko Haram extended its terror attacks into neighboring countries, on the Nigerien, Cameroonian and Chadian side of Nigeria’s northeastern borders (Figure A1). The increased number of attacks forced people to leave leading to both internal displacement and cross border population movements. According to IOM and NEMA there are currently 1,713,132 Internally Displaced Persons (IDPs) in the three states affected by Boko Haram violence in Northern Nigeria. In total, 1,856,616 IDPs captured through the DTM assessments have been displaced by the insurgency (86.16 percent of the total IDP population). The majority of IDPs are in Borno (1,427,999), followed by Adamawa (150,718) and Yobe (134,415).

Figure 1: Violent activity by type in North Nigeria (Yobe, Adawama and Borno)



Source: ACLED

Conflict-related fatalities tend to be clustered south of Maiduguri, with the highest density of conflict events and fatalities being recorded along the border between Nigeria and Cameroon. (Map 1). Boko Haram is responsible for 85 percent of conflict-related fatalities recorded in the region between 2010 and 2015. The deaths not caused by Boko Haram can often be attributed to state military forces or unidentified armed groups.

IOM estimate that 53 percent of the IDP population are female and that 54 percent of the IDPs are below 18 years old. Children and women are especially vulnerable in times of armed conflict. Since 2009, Boko Haram subjected women and girls to widespread and severe abuses, including sexual slavery, sexual violence, forced marriages, forced pregnancies and forced conversions (OHCHR, 2015). According to OHCHR, women and girls who were kidnapped by

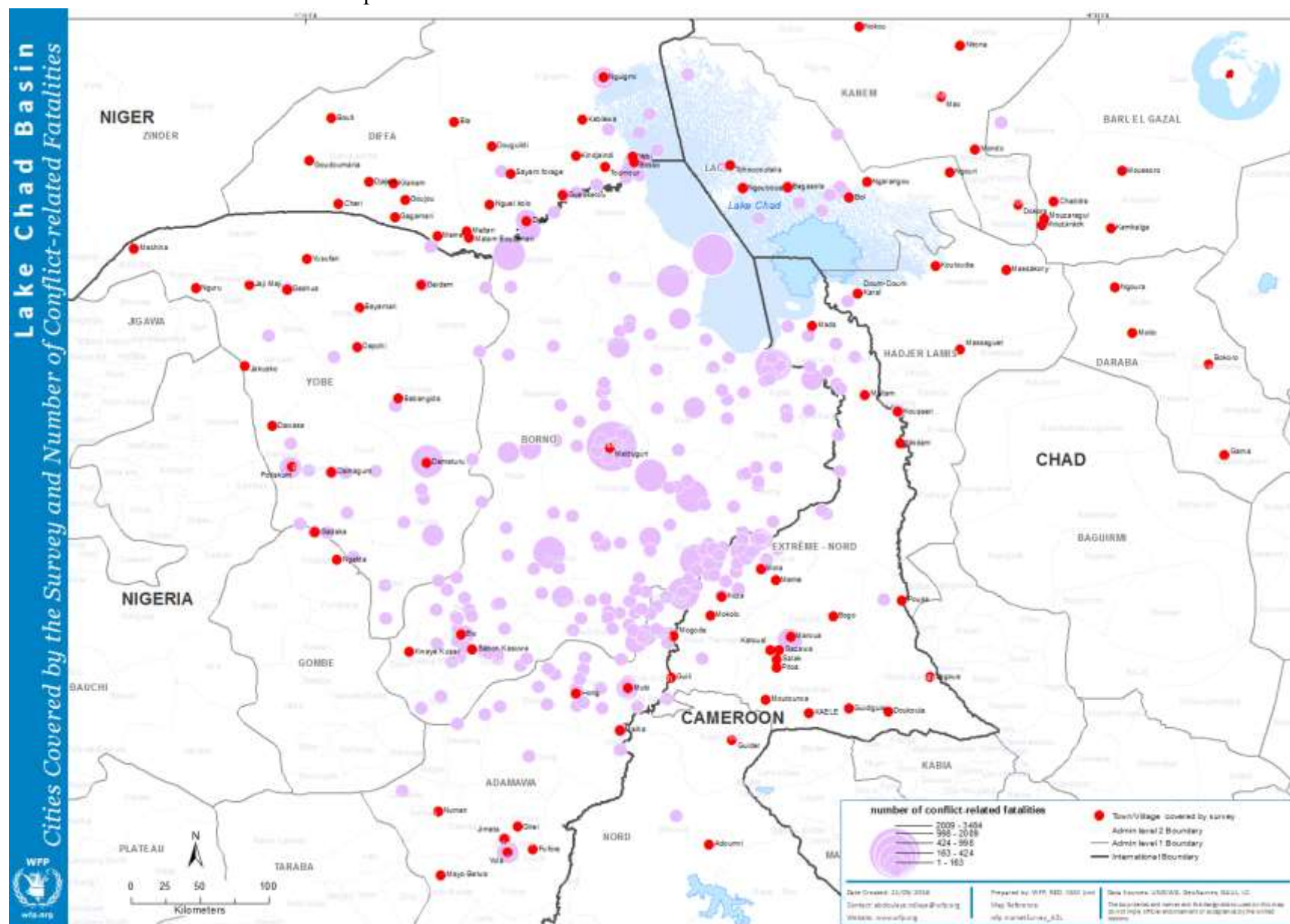
Boko Haram generally faced worse stigmatization than men and boys. Pregnant women and women who gave birth whilst in captivity or shortly after rescue, are particularly stigmatized, together with their children.

Nigeria, which is the first economic power in the region, faces economic challenges

Nigeria is Africa's most populous country, with more than 180 million people in 2014 according to World Bank estimates. The oil and gas sector accounts for the majority of government revenues and export earnings, making the country highly vulnerable to swings in global oil prices. Low global oil prices have a strong negative impact on Nigeria's actual and projected economic performance. The country faced a sharp decline in real GDP growth in 2015 (which dropped from 6.2% in late 2014 to 2.8% in late 2015) and a rise in the general government deficit that doubled to about 3.3 percent of GDP in 2015 (IMF, 2016).

The value of the Nigerian naira has depreciated by more than 30 percent between December 2015 and February 2016 due primarily to reductions in oil sector revenues in 2015 (FEWS NET, 2016). This depreciation will reduce the purchasing power of Nigerian traders for imported goods, such as rice, wheat, and livestock and cash crops from the Sahel.

Map 1: Number of conflict related fatalities between 2010 and 2015



Map produced by WFP/VAM Regional Bureau Dakar. Source: ACLED and trader survey

4. Food availability

Millet and sorghum are the staple diet in Niger and Chad and to a lesser extent in Nigeria and Cameroon. According to the latest available data (FAO, 2016), millet and sorghum are the main source of calories in Niger and Chad where these two crops account for respectively 54 and 34 percent of the total energy consumption. In Cameroon, sorghum is the third source of calories behind maize (13%) and cassava (11%). In Nigeria, rice, cassava, maize and sorghum account for a similar share in the Nigerian diet (about 10%). We expect some differences to be found by region but no disaggregated data were available.

North Cameroon, North Nigeria, Chad, Niger share a very similar cultural calendar

The regions surrounding the Lake Chad Basin are located in four different countries but they share a very similar cultural calendar centered on the grain harvest that starts in October and lasts until December (Figure 2). Farmers sell a share of their production at harvest to meet their financial needs and the rest is stored on the farm until the next season. The wholesalers hold grain stocks for generally short periods, not more than six months (Table 10). The public authorities also manage food stocks that are built up at the beginning of the year (January to March), and which are intended to be sold on the market in the following months.

Figure 2: Calendar of a typical cereal marketing year in the Sahel

Harvest			Off-season harvest						National food security stock released		Harves
Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept
Large supplies of locally produced cereals on markets							Pastoral lean season	Agricultural lean season			
		Peaks levels of institutional demand						Markets in the Sahel supplied by large trader stocks			

Source: Fewes Net

Nigeria is the first producer of cereals in the region followed by Niger, Cameroon and Chad

Nigeria is the largest producer of cereals in West Africa and the world's leading producer of cassava. Nigeria's production of cereals reached 20.7 million in 2015 (USDA, 2016) with maize accounting for 34% of the cereal production followed by sorghum (30%) and millet (23%). According to the Federal Ministry of Agriculture and Rural Development, Yobe, Borno and Adamawa made up 18 (11) percent of the production of sorghum (millet) in 2013, 8% of the maize production and 5 percent of the rice production, with Borno being the largest producer out of the three regions. Although these three regions are not the grain basket of Nigeria, they represent an important share of the production of traditional grains. We did not manage to get access to the most recent production data at regional level but Boko Haram insurgency is likely to reduce the production of sorghum and millet in these regions by forcing farmers to leave.

Niger ranks second in the cereal production of the four countries, with a cereal production of 4.5 million tons in 2015 divided between millet (70%) and sorghum (30%) (Figure A2a to A2d). Maradi and Zinder are the main grain producing regions of Niger whereas Diffa face structural food deficit as the region accounts for only one percent of domestic grain production.

Maize is an important traditional food crop in Cameroon, ranking first - before sorghum and rice - in terms of annual production. The production of cereal in Cameroon was about 3 million tons in 2015, with 58 percent being maize followed by sorghum (38%).

Grain production in Chad in 2015 totaled an estimated 2.4 million tons, down 11 percent from 2014 (2,748,668 MT) and 9 percent from the past five years average (2,687,408 MT). Sorghum is the main food crop contributing to more than 45 percent of grain production followed by millet (33%) and maize (20%). Among the four Chadian regions considered in the survey, only two provide more than one percent of cereal production: Hadjer Lamis and Lac. They respectively contributed to 3 and 4.6 percent of domestic production of cereals in 2015. Hadjer Lamis is a producing region of millet and sorghum while Lac is the first region for maize, accounting for 30 percent of domestic production.

5. Trader characteristics

Female participation in agricultural trade appears to be low and women are more often found to be retailers than wholesalers

As outlined earlier, women account for a small share of traders, especially in Niger where only one female trader is included in the survey. Although we cannot draw conclusions about the whole population based on this survey that is not representative at the market level, the data still suggest that women take a more active part in agricultural trade in Cameroon than in the other countries surrounding the Lake Chad basin. The timing of the survey may play a role in the low participation of women in trade. Women have typically low access to finance (IFC, 2011) and then are more likely to sell agricultural commodities only seasonally, following the harvest that typically start in September. Additionally, the role of women in trade is shaped by social norms. In Niger, women typically sell condiments and meals to other women (De Sardan, 2011), as women are in charge of buying condiments. In North Nigeria, women role varies by ethnic group but women are often involved in post-harvest activities such as cleaning and sorting grains as it contains impurities.

Table 2: Traders' type by selling point*

		Cameroon		Chad		Nigeria		Niger	Total	
		Total	Women's share (%)	Total	Women's share (%)	Total	Women's share (%)	Total	Total	Women's share (%)
Retailers	Nb	245	65	275	29	500	12	116	1136	27
	%	67.87		66.75		60.02		61.05	63.25	
Wholesalers	Nb	114	11	124	3	332	7	69	639	6
	%	31.58		30.10		39.86		36.32	35.58	
Assembly trader	Nb	2	50	13	8	1	0	5	21	10
	%	0.55		3.16		0.12		2.63	1.17	
Total	Nb	361	48	412	21	833	10	190	1796	19
	%	100		100		100		100	100	

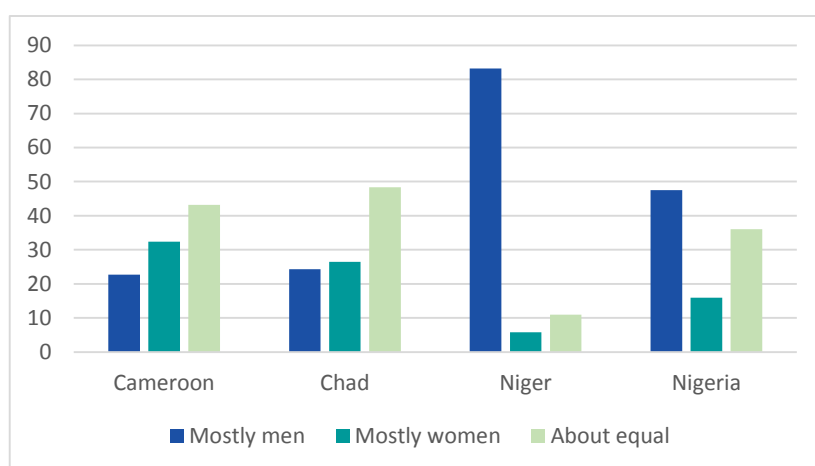
Note: *A trader who is both retailer and wholesaler is counted twice in the table. We consider in this table the number of shops selling in retail/wholesale rather than the number of traders. Source: Traders survey

A strong gender imbalance is found between retailers and wholesalers (Table 2). Women involved in agricultural trade are more likely to be retailers, even in Cameroon where women make a large contribution to trade. Women account for only 11 percent of the wholesalers in Cameroon whereas 65 percent of the surveyed retailers are female. The small number of assembly traders on the markets is due to the period of the survey, which was conducted several months after the grain harvest period.

Female traders are less likely to have employees and most employees are male

More than half of the traders employ people in their business but the differences between countries are large. Nigeria is by far the country where the largest share of traders have employees (79%) followed by Niger (53%), Chad (47%) and Cameroon (13%). Women are less likely to have employees, which is consistent with the fact that most women are retailers. Only 23% of female traders have employees compared to 63% of male traders. The gender gap is the largest in Chad where 55 percent of male traders employ people compared to 19 percent for women. Most of the traders' employees are male. The share of female employees range from 3 percent in Niger to 16 percent in Chad, reinforcing the idea than women do not take an active part in the grain business in the regions surrounding the Lake Chad basin.

Figure 3: Gender of customers



Source: Traders survey

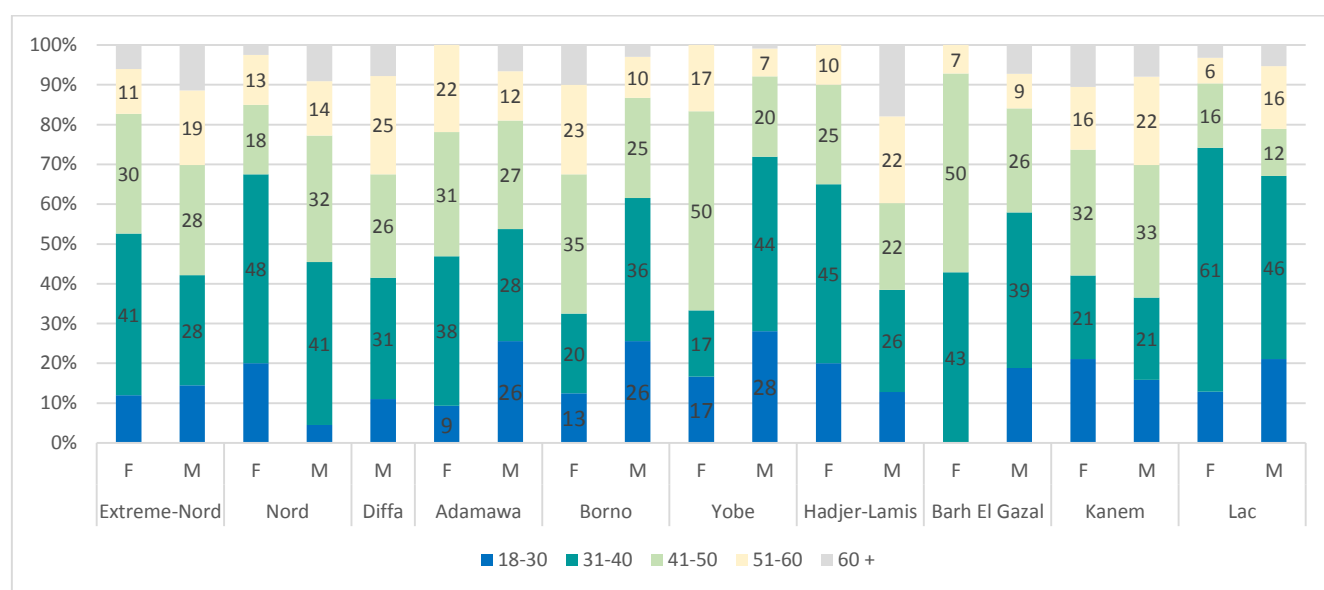
In Niger, participation rates of women as traders, employees and customers are the lowest of the four countries. By contrast, the reported repartition of customers between “mostly male” and “mostly female” in Chad and Cameroon is almost equal, and the most commonly reported case for the two countries was an equal balance between female and male customers (Figure 3).

Reasons behind the low participation of women in agricultural trade in the region are multifaceted. One important constraint is the prevalent conception that women's reproductive and domestic responsibilities constitute their main role. A second constraint is that women face financial access barriers that prevent them from expanding their businesses. According to a report published in 2011 by IFC, access to finance for women is limited by nonfinancial barriers. The legal and regulatory environment, the quality of available infrastructure, education, and social norms shape women's need for capital and their ability to obtain it.

Most traders are between 30 and 50 years old. The share of traders below 30 is higher for retailers than wholesalers and about a third of female traders in Borno state are above 50 years old.

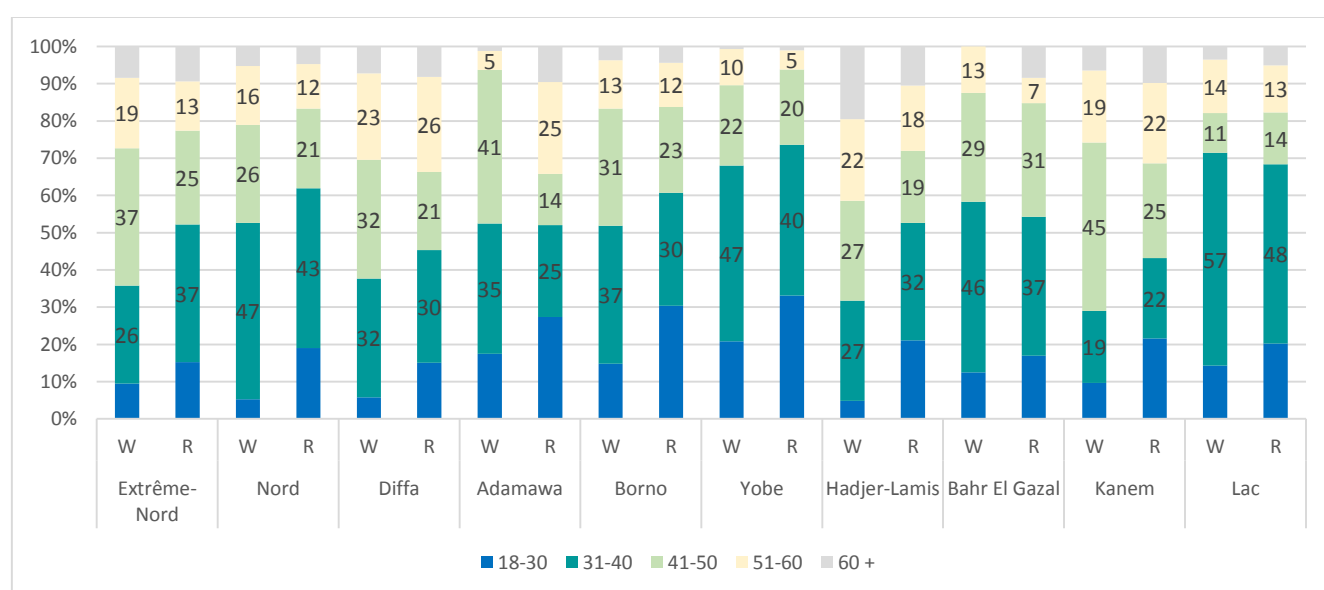
In Nigeria, the share of traders below 30 is higher than in the other countries but they are mostly men and retailers. The share of female traders younger than 40 years old is higher than 50 percent in Cameroon and in two regions of Chad (Hadjer-Lamis and Lac) but only a third of female traders is below 40 years old in Borno and Yobe (Figure 4). In Borno, 33 percent of female traders are older than 50 reflecting the fact that it is more socially acceptable for older women to work as traders than for younger women.

Figure 4: Traders' age by gender



Note: F refers to female and M to male. Source: Trader survey

Figure 5: Traders' age by type of traders

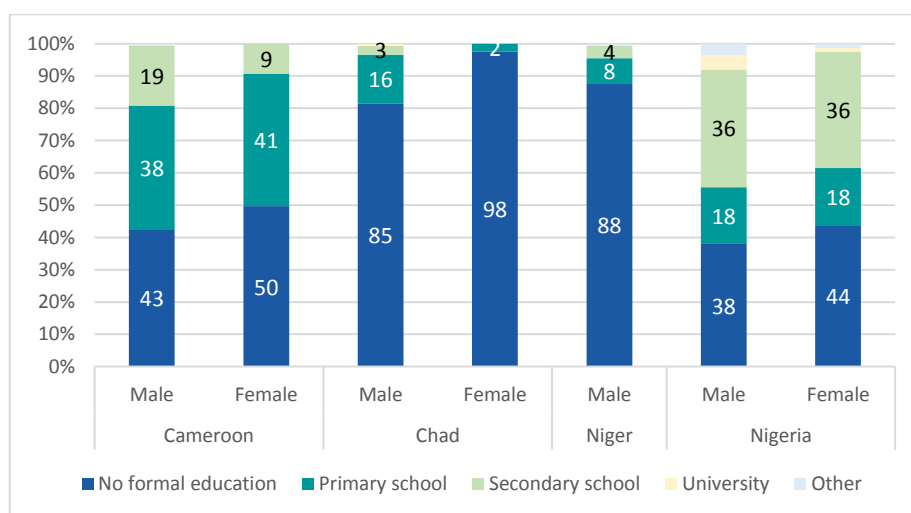


Note: W refers to wholesalers and R to retailers. Source: Trader survey

Traders have very low level of education in Chad and Niger compared to Cameroon and Nigeria

The level of education among traders is low, especially in Chad and Niger where respectively 85 and 88 percent of the traders have never been to formal school. Cameroon and Nigeria stand out, with more than half of the surveyed traders who have attended at least primary school. In Nigeria, 4 percent of traders have attended university (Figure 6). In Chad, access to formal school seems limited for women as only two percent of female traders attended primary school compared to 16% of male traders. The country in our sample with the greatest gender inequity in primary education—measured by a gender parity index (GPI)³ - is Chad (UNESCO Institute for Statistics). Koranic schools play an important role in Niger and Nigeria, especially for men, as respectively 48 and 25 percent of male traders attended koranic schools in these countries.

Figure 6: Level of education among traders



Source: Trader survey

North Nigeria's markets offer a large diversity of products compared to the other countries

The commodities sold by traders vary by country, with the largest choice being offered by Nigerian traders. The six commodities listed in Table 3 are sold by at least 30 percent of the traders in North Nigeria compared to Niger and Cameroon⁴ where the choice of commodities is very limited. The highest diversity of products in Nigeria is likely to reflect the higher purchasing power of the population that may afford a larger diversity of imported goods compared to the other countries.

³ The Gender Parity Index is the ratio of female gross enrolment ratio for primary to male gross enrolment ratio for primary. It is calculated by dividing the female value for the indicator by the male value for the indicator. A GPI equal to 1 indicates parity between females and males. In general, a value less than 1 indicates disparity in favor of males and a value greater than 1 indicates disparity in favor of females.

⁴ The low diversity of food supplies in Cameroon may come from the fact that the trader questionnaire targeted the main local commodity and the main imported commodity. In Cameroon, 82% of traders declared that they were not selling any imported products.

Table 3: Food commodities sold by at least 30 percent of the traders

Cameroon	Chad	Niger	Nigeria
Sorghum (61%), Maize (48%)	Millet (65%), Maize (55%), Imported rice (40%)	Millet (78%), Sorghum (35%)	Beans (56%), Local rice (55%), Imported rice (54%), Maize (49%), Processed food (37%), Peanut (30%)

Source: Traders survey

6. Trade flows and market access

The conflict in North Nigeria has disrupted internal and cross-border trade flows

Map 2 represents trade flows of cereals as depicted by transporters⁵. The Diffa region in Niger receives supplies of cereals i) from the region of Zinder that ranks second in terms of domestic production of grains and ii) from Nigeria through Geidam and Gashua located in Borno state. The Gashua-Geidam-Maine Soroa axis has become a major cross-border trade route for traditional grains, maize and millet as Gashua and Geidam supply almost 70 percent of the markets in Diffa. Before the Nigerian insurgency, the axis Damassack-Diffa was a major trade route that is no longer used since the attack of Damassack in December 2014. According to WFP Niger, police have taken security measures aimed at reducing supplies destined to rebels, which create obstacles for traders and contribute to reduce the volumes of trade flows.

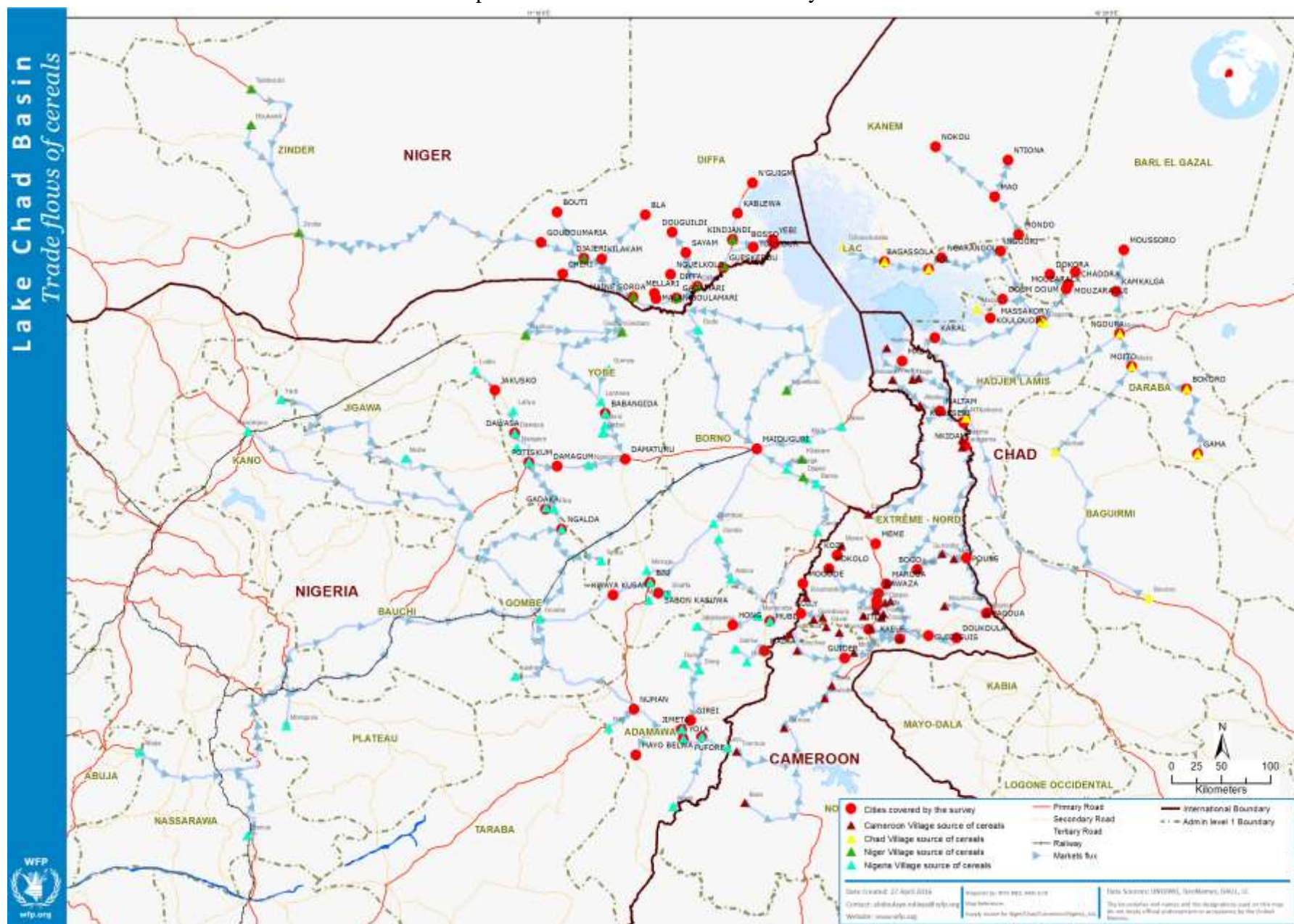
In Cameroon, food commodities move from the South onwards to the cities located in the Extreme North but trade flows originating from Nigeria seems rare as only one transporter out of 26 cited Nigeria as its main source of supply for cereals. This suggests that cross-border trade between the two countries has been disrupted by the conflict as trade between Nigeria and Cameroon was substantial before Boko Haram insurgency (World Bank, 2013). World Bank (2013) estimate that Nigeria exported at that time more than 213,000 metric tons of non-oil products to Cameroon annually, more than forty times official estimates.

Most trade between the two countries was taking place along 10 major corridors and seven of them were located in the northern part of Cameroon. Before the conflict, most traffic in the north flew along the corridor from Maiduguri to Kousseri or Maiduguri to Maroua. Other important corridors were running from Mubi to Guider and from Jimeta/Yola to Garoua. The most important trade route in the North and Extreme North was between Banki in Nigeria and Mora in Cameroon. Nigerian exports were made of general merchandise, plastic products, vegetable oil, and petroleum products, especially fuel while Cameroonian exports included re-exports of imported rice, paddy rice and soap produced in the south of Cameroon.

In North Nigeria, cereals come either from neighboring villages or from Kano, Abuja or from Benue state that is referred to as the food basket of the nation. Despite insecurity, traders manage to supply the main markets in Borno state. In Chad, the regions of Baguirmi, Daraba and Bol supply the food deficit regions of Kanem, Bahr El Gazal and Hadjer Lamis.

⁵ As the trader survey did not include questions about the main supplying markets of cereals, we used the transporters survey to create the map below, implying that only the main trade routes are depicted on the map.

Map 2: Trade flows of cereals – January 2016



Transporters in North Nigeria face high transport costs and numerous checkpoints

Transporters survey revealed that transporters in North Nigeria face transport costs that are considerably higher than in Niger, Chad, and Cameroon. The survey does not enable us to assess what are the main drivers of these high costs.

It is well documented that the trucking industry in West and Central Africa is characterized by cartels offering high prices and low service quality. Teravaninthorn and Raballand (2009) found that road conditions are not the main determinant of transport prices in West and Central Africa. They show that investing in road infrastructure is not a sufficient condition for lowering transports prices as long as the market is strongly regulated. They believe that deregulating the trucking industry and reforming cartels is the most efficient strategy to decrease transports prices.

Insecurity may prevent transporters from coming into some markets if they cannot ensure security for their vehicles and goods as well as be assured of profits and customers. It is likely that the security situation in North Nigeria drives transports prices up by decreasing the number of transporters willing to use some corridors. Additionally, transporters in Nigeria face a high number of checkpoints, especially in Borno state (Table 5). While they are primarily intended to prevent the entry into the country of undesirable individuals and the smuggling of illegal goods, they generate a range of obstacles to the free flow of goods including congestion, delays and corruption. Borno state has the highest density of checkpoints, two third of them being formal. The high number of checkpoints reflect the poor security situation in the state and raises the cost of trucking as drivers going to Borno state have to pay an average of 127 US\$ in taxes along the way.

Checkpoints are also very numerous in Chad, except in the Lac region. The costs of the checkpoints are very high for truck drivers going to the Bahr El Gazal region as they spend on average 119 US\$ for each trip from the grains supply areas.

Transport prices are seasonal

Agricultural trade in the Lake Chad basin is quite seasonal: during the rainy season, transport time and transport costs increase substantially. Some markets are not easily accessible by trucks during the rainy season (Table 4). It is especially true in Kanem, Bahr El Gazal and Adawama, where transport time between the dry and the rainy season increase sharply, leading to a rise in transport costs that is likely to affect food prices.

Table 4: Cities that are difficult to access by truck during the rainy season

Cameroon	Chad	Niger	Nigeria
Adoumri, Bogo, Doukoula, Kaele, Koza, Meme, Pitoa, Pouss, Salak	Doum-Doum, Gama, Mondo, Moussoro, Mouzaragui	Bouti, Cheri, Kindjandi, Nguelkolo, Yebi	Damagum, Dawasa, Fufore, Jakusko, Potiskum

Source: Transporter survey

The average distance between markets and supply sources of cereals is very high in Chad

The region of Kanem in Chad is the region farthest away from the main supply zones of cereals, forcing transporters to drive 46 hours on average to connect the markets of Kanem with the supply zones (Table 5). The region of Bahr El Gazal is isolated too, especially during the rainy season, as drivers may need an average of 61 hours to reach the region from the main supply areas.

The average distance between the Borno states cities and the supply markets is 249 km, which is very high compared to the other regions of Nigeria. The size of the Maiduguri market is a plausible explanation. Maiduguri being the largest market in our sample attract food commodity traders from all over the country, including Kano and Benue state, located respectively 500 and 640 kilometers away from Maiduguri.

The regions with the best access to supply markets are Adamawa in Nigeria, Nord in Cameroon and the Lac region in Chad. Despite its relative proximity to the supply areas, transport costs in Adamawa are high. Overall, transport costs in North Nigeria are a lot higher than in the other countries.

Table 5: Market access

	Cameroon		Nigeria			Niger		Chad		
	Extreme-Nord	Nord	Adamawa	Borno	Yobe	Diffa	Lac	Hadjer-Lamis	Bahr El Gazal	Kanem
Average distance (km) to the main market supply for cereals	93	36	34	249	92	109	50	178	173	348
Transport time (hour) during the dry season	6	3	4	31	9	6	6	7	13	46
Transport time (hour) during the rainy season	8	10	17	32	13	9	6	8	61	78
Transport cost (US\$/MT/km) during the dry season	7	0,3	37	13	58	4	1	0,3	0,4	0,2
Transport cost (US\$/MT/km) during the rainy season	9	1	39	14	61	4	1	0,4	1	22
Number of formal checkpoint	2	2	2	16	3	5	3	8	8	2
Number of informal checkpoint	5	5	1	8	3	2	1	2	1	5
Amount of taxes paid by pick-up driver (US\$)	1	17	1	3	2	40	11	11	43	43
Amount of taxes paid by truck driver (US\$)	73	34	1	127	12	76		19	119	57

Source: Transporter survey

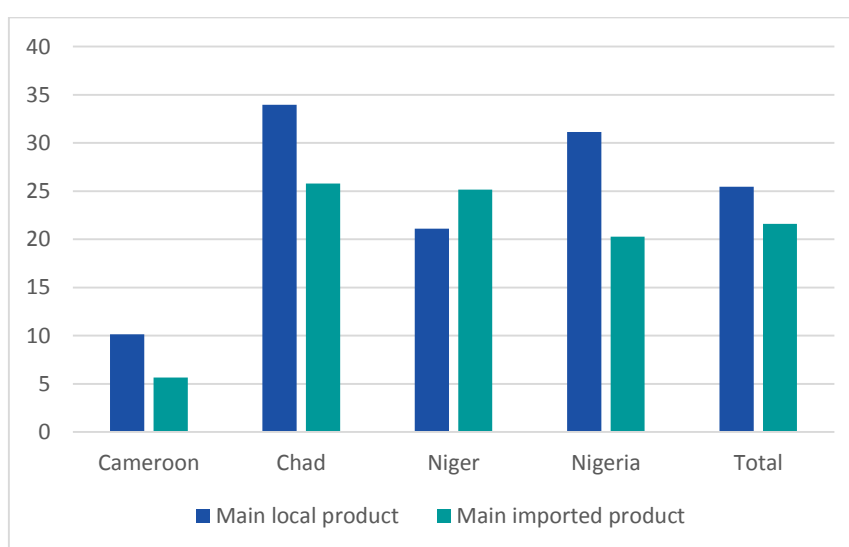
7. Supply chain

7.1. Changes in supply sources

Traders have been asked whether they have changed their source of supply since the start of their activities. Overall, at least 65 percent of traders did not change their sources of supply, suggesting that they manage to keep the same supply source in spite of the security crisis in North Nigeria (Figure 7). Supply of imported commodities is more stable than supply of local commodities in each country, except in Niger where 65 percent of imported commodities is either millet or sorghum coming from neighboring Nigeria. Local products such as traditional cereals are more subject to change in supply due to changing seasonal conditions, both within a year and between years.

Traders who have changed their supply source since the start of their activities did it mainly to face an increase in demand. Insecurity is the fourth reason explaining changes in supply source but it is the first reason in Niger, where 34 percent of traders selling local commodities modified their source of supply for security reasons.

Figure 7: Share of traders who change the source of supply of their commodities since the start of their activity



Source : Trader survey

7.2. Strategies to cope with price increases or supply problems

Overall, 40 percent of the traders had to develop unusual strategies to cope with price increases or supply problems. This share is the highest in Chad (47%) followed by Nigeria (45%), Cameroon (36%) and Niger (26%).

The strategy the most used in Cameroon and Chad to deal with prices increases is the use of other production areas, suggesting that traders in these countries have more options in terms of supply areas than Niger, where only a small share of traders use this strategy (Table 6). None of the traders in Diffa has changed providers as a strategy to cope with supply issues, which is consistent with the fact that an important share of traders relies on suppliers as their main

sources of funding (Figure 9). Traders in Nigeria use various options, the more common being storage and the use of other production areas. It is surprising to see that 14 percent of traders in Chad choose to decrease margins. This percentage reaches 39 percent in the region of Kanem, implying that traders there have no other options as we can assume that decreasing margins is one of the least preferred strategies.

Table 6: Unusual strategies developed by traders to cope with price increase or supply problems

		Cameroon	Chad	Niger	Nigeria	Total
Use of other production areas	Nb	79	118	7	102	306
	%	61.24	67.43	17.07	30.72	45.20
Imports remedies	Nb	2	34	10	10	56
	%	1.55	19.43	24.39	3.01	8.27
Decrease in trade margins	Nb	4	25	3	33	65
	%	3.10	14.29	7.32	9.94	9.60
Clearance	Nb	9	2	11	1	23
	%	6.98	1.14	26.83	0.30	3.40
Storage	Nb	33	61	14	153	261
	%	25.58	34.86	34.15	46.08	38.55
Change providers	Nb	12	53		37	102
	%	9.30	30.29		11.14	15.07

Source : Trader survey

8. Price

Price data are provided by different sources: i) FEWS NET in Chad, ii) FEWS NET and NAMIS (Nigeria Agricultural Market Information Service) in Nigeria, iii) the domestic market information system in Niger and iv) the National Institute of Statistics in Cameroon. The analysis in this section suffers from low price data availability in Nigeria and Cameroon. Specifically, the price analysis in Cameroon is limited to the analysis of prices in Garoua. In Nigeria, agricultural prices collected by NAMIS were available from January 2007 to September 2012 for 20 markets but only two of them are located in the regions covered by the survey (Damaturu and Yola). Finally, FEWS NET provides prices data on markets located in North Nigeria but the series contain many missing data. All prices have been converted to CFA Francs using monthly exchanges rate compiled by OANDA (www.oanda.com).

8.1. Price level and price volatility

Millet:

Millet prices in Chad are higher and more volatile than prices in Niger and Nigeria.

Millet prices in Chad are very high, especially in the region of Kanem (Nokou, Mondo, Mao). The highest prices are recorded in Nokou and Ngouri (region of Lac). Significant geographical disparities exist in prices between regions in Chad suggesting that millet markets are only

partially integrated. Of the nine price series for which we have information in Chad, Bokoro stands out with low prices compared to the other cities in our Chadian sample (Figure 8).

Globally, prices in Chad are considerably higher than in Niger and Nigeria, with Nigeria being the cheapest country in our sample for millet (Figure 8). Prices have increased in every city over the 2008-2015 period with the largest rise being recorded in Bol where prices have more than doubled between October and November 2014.

Prices in Chad are on average more volatile than prices in Niger and Nigeria, even when Bol and Ngouri are excluded of the sample. Bol and Ngouri have indeed very high levels of volatility (Table A2) that may originate from large seasonal variations (Figure 13) and from the sharp rise in millet prices experienced in 2015 (Figure 9).

Figure 8: Average retail prices of millet in Chad, Niger and Nigeria (CFAF/kg)

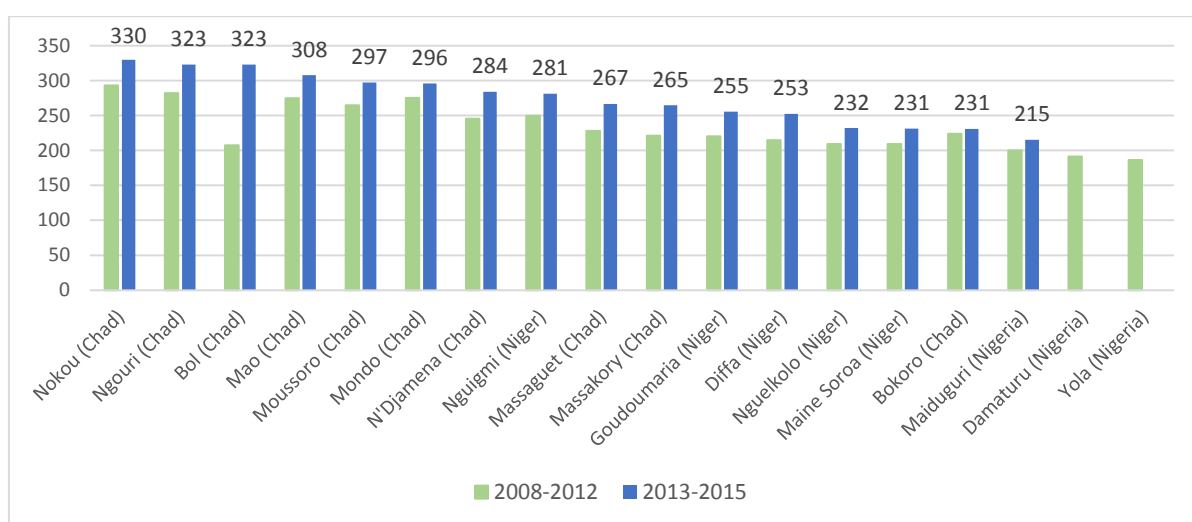
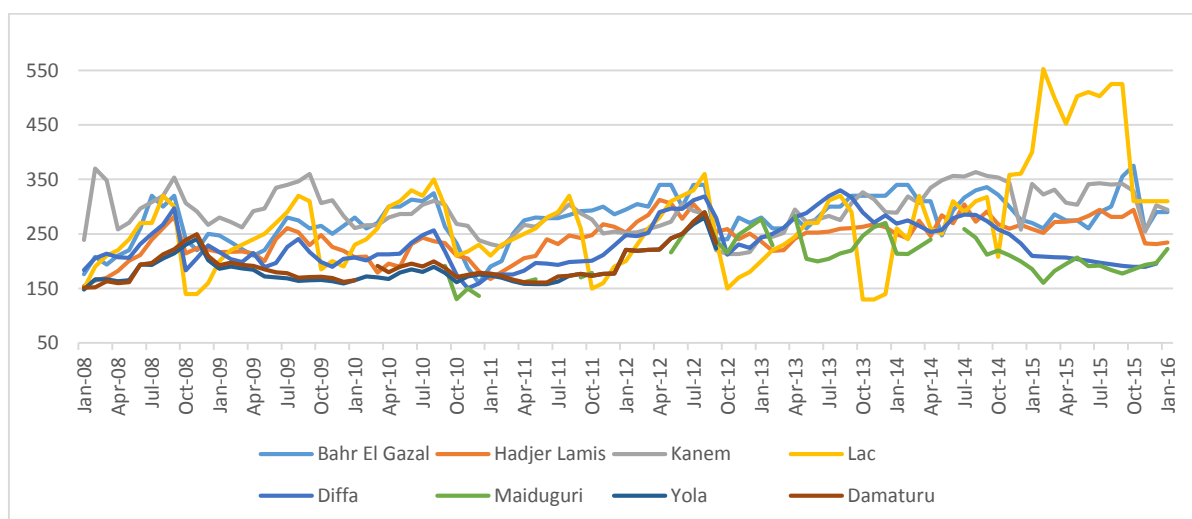


Figure 9: Millet price in CFAF/kg



Note: Prices in Chad and Niger are averages of prices in each region. Hadjer-Lamis: average of Bokoro, Massaguet, Massakory, N'Djamena. Kanem: average of Mondo, Nokou, Mao. Lac: average of NGouri, Bol. Bahr El Gazal: Moussoro. Diffa: average of Nguigmi, Goudoumaria, Diffa, Maine Soroa, Nguelkolo.

Sorghum:

Spatial price dispersion is much lower for sorghum than millet

In Chad, sorghum is considerably cheaper than millet in each market considered in our sample leading to smaller spatial price dispersion for sorghum than for millet in the Lake Chad basin (Figure 10). This is likely to reflect a better availability of sorghum in Chadian markets that may come from the fact that sorghum is the first produced cereal in Chad. In Niger, millet and sorghum prices are in the same order of magnitude. Finally, Yola and Damaturu are the only markets in our sample where sorghum is slightly more expensive than millet.

While the level of prices is about the same order of magnitude in Chad, Niger and Nigeria, price volatility is much higher in Chad, which may reflect some tensions regarding the supply conditions (Table A3).

Figure 10: Average retail prices of sorghum in Chad, Niger and Nigeria (CFAF/kg)

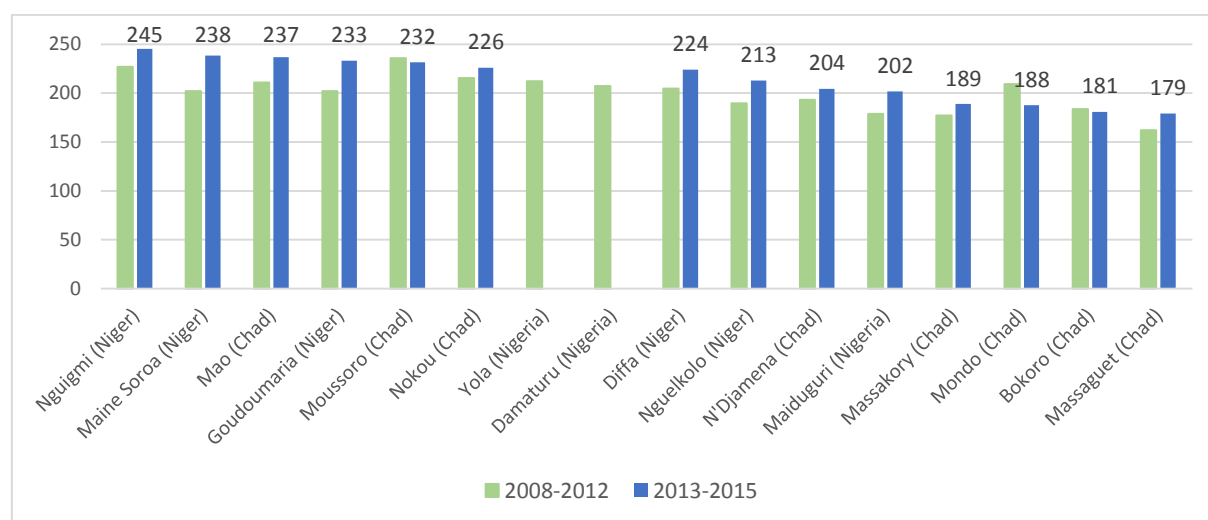
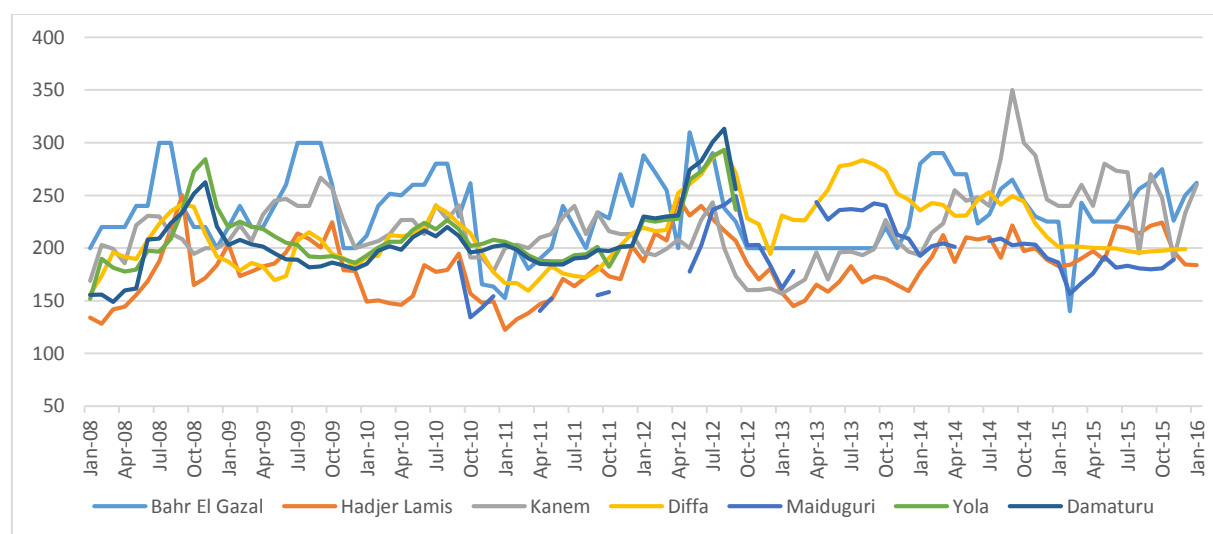


Figure 11: Sorghum price in CFAF/kg



Note: Prices in Bahr El Gazal, Hadjer-Lamis, Kanem and Diffa and averages of the prices series contained in Table A3.

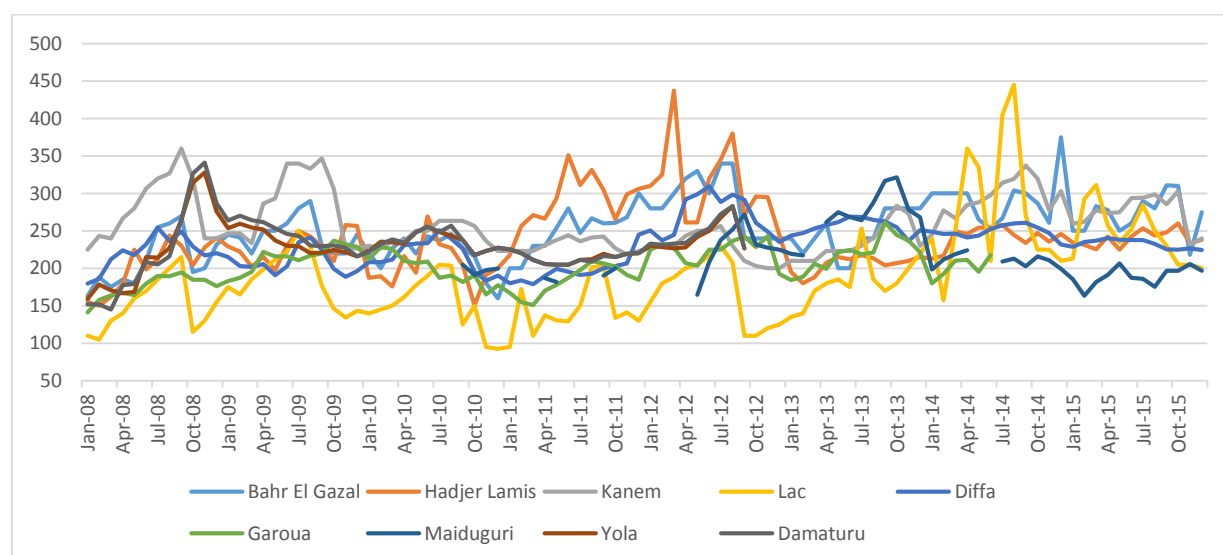
Maize:

Spatial dispersion of maize prices is high in Chad and maize prices are very volatile in this country

We cannot compare spatial price dispersion between countries as our sample contains only one market in Cameroon and three markets in Nigeria. Nevertheless, it is interesting to note that the highest prices and the lowest prices of our sample are recorded in Chad over the period 2008-2015 (Table A4), with the lowest prices being found in the Lac region of Chad which is the main source of maize supply of the country.

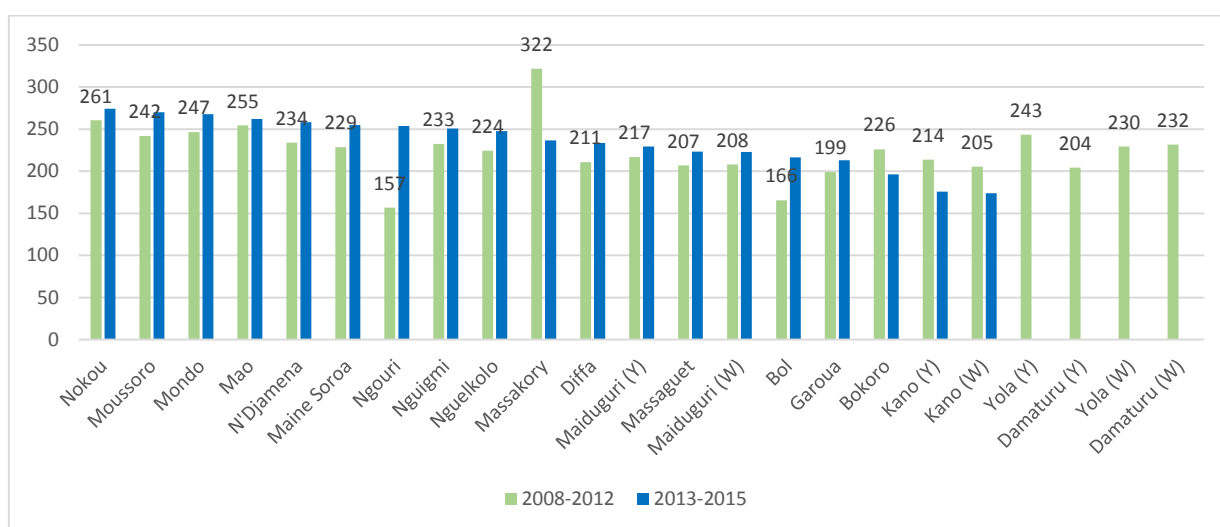
Price volatility is extremely high in two regions in Chad: Hadjer-Lamis and Lac due to the strong instability of prices in Bokoro, Massakory and Ngouri (Table A3). Each one of these markets experienced some episodes of sharp price increase over the period 2008-2015 as shown on figure 12.

Figure 12: Maize price in CFAF/kg



Note: Maize prices in Nigeria are for white maize. Note: Prices in Bahr El Gazal, Hadjer-Lamis, Kanem, Lac and Diffa and averages of the prices series contained in Table A4.

Figure 13: Average retail prices of maize in Chad, Niger, Cameroon and Nigeria (CFAF/kg)



Note: Y refers to yellow maize and W to white maize

Rice:

Spatial price dispersion for rice is low and globally rice prices have remained stable between 2008-2012 and 2013-2015

Rice prices do not differ greatly between markets in Chad, Niger, Nigeria and Cameroon (Figure 14). Overall, prices of imported rice have remained stable over the period even if some prices are characterized by atypical behaviors like Moussoro in Bahr El Gazal (Figure 15).

Figure 14: Average retail prices of rice in Chad, Niger, Cameroon and Nigeria (CFAF/kg)

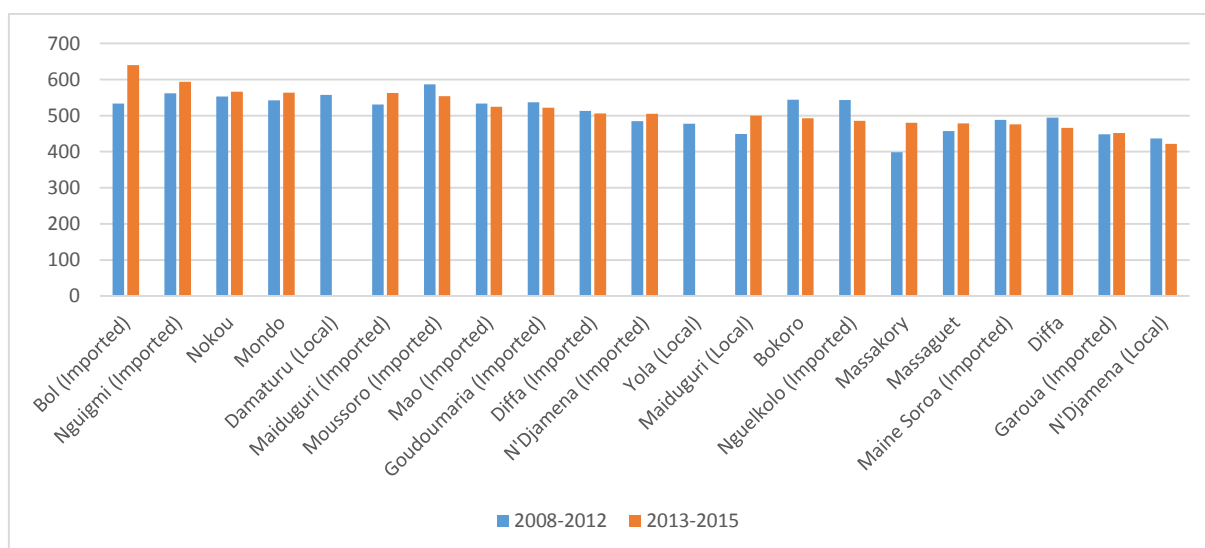
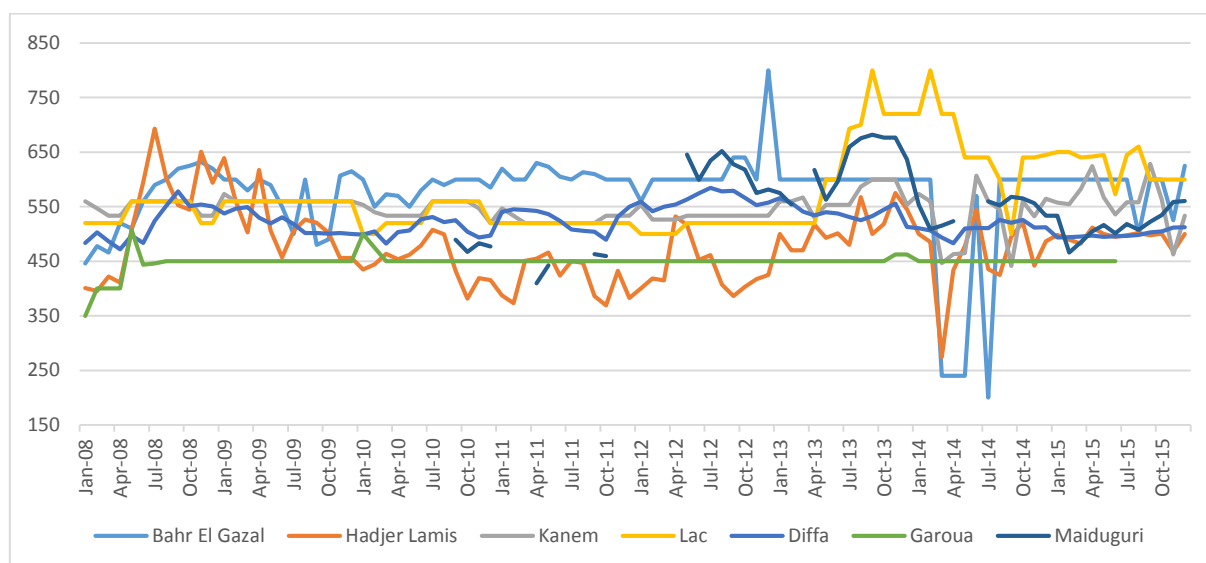


Figure 15: Prices of imported rice in CFAF/kg



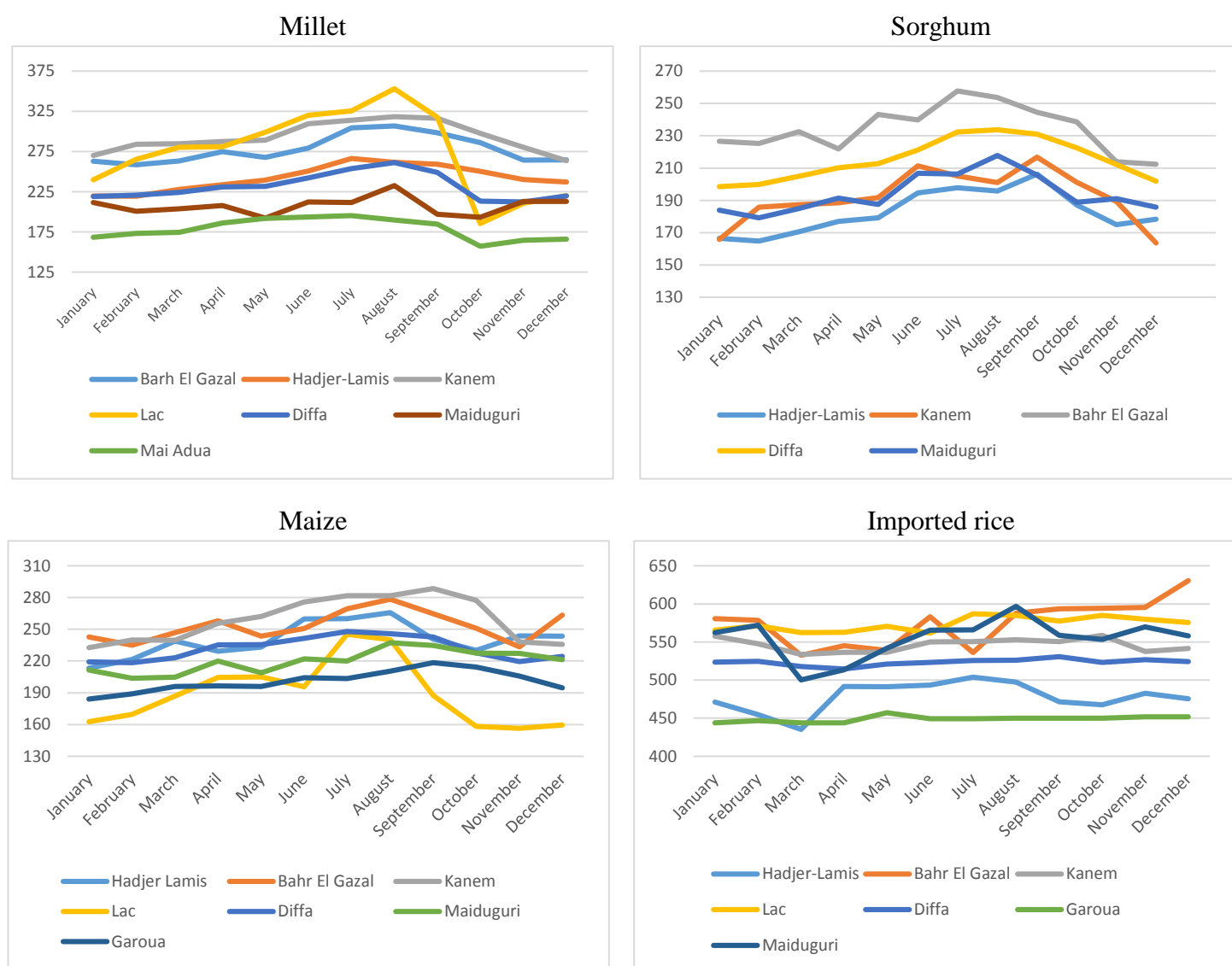
Note: Prices in Bahr El Gazal, Hadjer-Lamis, Kanem and Diffa and averages of the prices series contained in Table A5.

8.2. Price seasonality

Prices of millet, sorghum and maize exhibit large seasonal variation, especially in Chad. The magnitude of seasonal price variations is extremely large in the Lac region of Chad.

The seasonal pattern is highly pronounced for millet, sorghum and maize while prices of imported rice are almost stable except in Hadjer Lamis, Bahr El Gazal and Maiduguri. It is well known that grain markets in the Sahel experience substantial variation within the year, as prices drop following the harvest and rise during as the lean season (Figure 16). The magnitude of seasonal variations is extremely high in the Lac region of Chad. The price gaps of millet between the extreme months range from 34 to 76 CFAF/kg for all markets except in the Lac region where the amplitude of the seasonal cycles reach 157 CFAF/kg in Ngouri and 181 in Bol. In Bol, prices are divided by two between August and October.

Figure 16: Seasonal pattern of cereals (2008-2015, CFAF/KG)



9. Volumes

Trade is more dynamic in North Nigeria, which is consistent with the fact that Nigeria is a massive consumer market

Trade in North Nigeria is considerably more active than in the other countries of the Lake Chad Basin. In Cameroon, Chad and Niger, the average number of customers by village and trader ranges from 10 to 50 per week, with the exception of the market of Djajeri in Niger (Figures A3a to A3c). By contrast, the number of customers in Nigeria is below 100 customers only in two markets and one third of the surveyed towns have more than 300 customers by trader every week (Figure A3d).

The most active Nigerian cities in terms of trade are located in the Northwestern Yobe

The intensity of marketing activities in North Nigeria can be grasped by the quantities of commodities sold each week by market (Figure A4d). The markets of Bayamari, Geidam,

Geishua and Jajusko are the four markets with the highest weekly sales, with Jajusko and Gashua being more active in the trade of local goods whereas Bayamari and Gashua are providers of imported commodities. It is interesting to note that the four more active markets of North Nigeria are located in the Northwestern Yobe, a region less exposed to Boko Haram's acts of violence than Borno (Figure A1).

Maiduguri, which is located at the center of Borno's state, appear as relatively small market in terms of the sum of weekly sales of local and imported commodities, ranking only 16th out of the 29th surveyed villages, while Maiduguri accounts for 22% of the surveyed traders in the Nigerian sample. Reasons behind can be that the market of Mona Garage – which is the largest wholesale market in Maiduguri – accounts for less than 10 percent of the sample in the city.

Weekly sales of food commodities are considerably smaller in Chad compared to Niger and Cameroon

The quantities of commodities sold each week in Chad, Niger and Cameroon are considerably smaller than in Nigeria. In Chad, Massakory, Moussoro, Gama and Mao are the most active cities in terms of weekly sales, while in Niger, Diffa and Djajeri stand out with weekly sales that are respectively 6 and 5 times larger than the third city in the sample (Kilakam). In Cameroon, Guili, Kousseri, Doukoula and Pouss are the cities recording the largest sales of food commodities (Figure A4a).

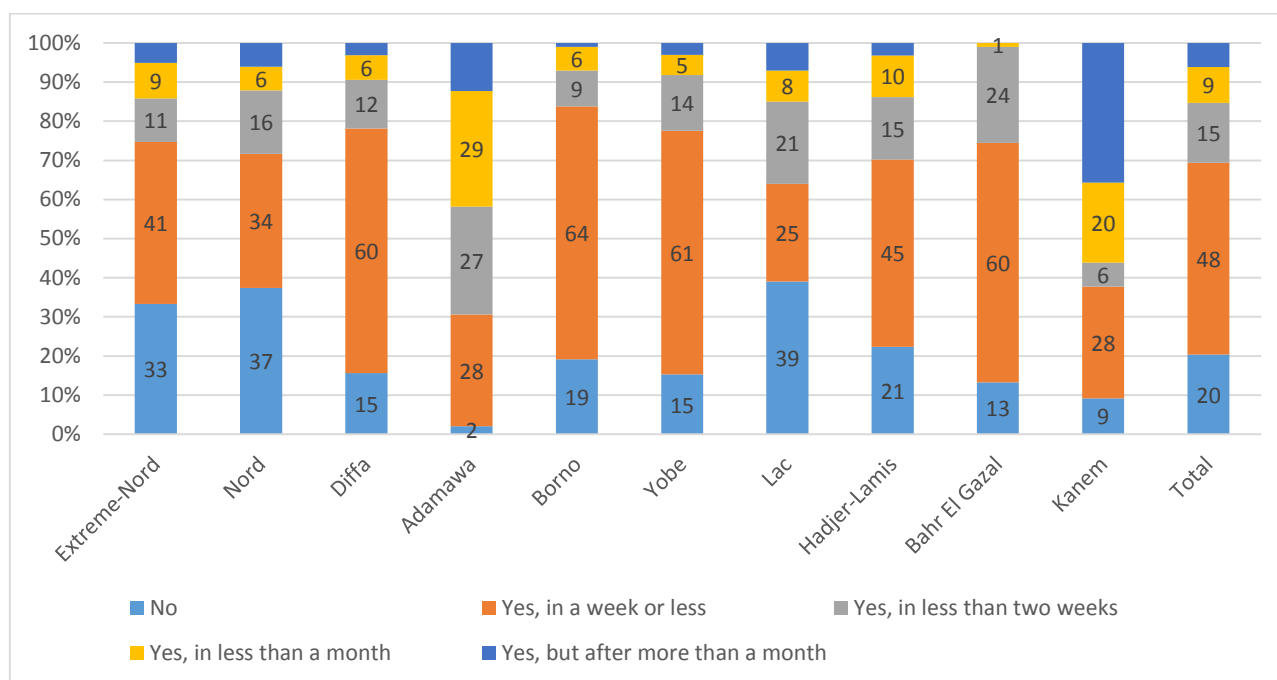
The sum of weekly sales of food commodities in Massakory – which ranks first in terms of sales in our Chadian sample – are less than 200 MT whereas the first city in Cameroon reach more than 500 MT and the first city in Niger records sales that are above 3000 MT per week.

10. Response capacity

Respond capacity seems good in Borno, Yobe, Diffa and Bahr El Gazal.

In terms of response capacity, traders estimate to have the capacity to respond quickly to a 100 percent increase in demand in four regions: Diffa in Niger, Borno and Yobe in Nigeria and Bahr El Gazal in Chad (Figure 17). The resupply times that traders report in Kanem are higher: 35 percent of traders need a month to be able to respond to a 100 percent increase in demand. In the North region of Cameroon and in the Lac region of Chad, almost 40 percent of traders are not able to meet a potential increase in demand by 100 percent. In the Lac Chad region, there may be a risk of an inflationary effect on the market should the demand double due to a cash and voucher programme as only 25% of traders are able to respond in less than a week.

Figure 17: Response capacity to a 100 percent increase in demand



Source: Traders survey

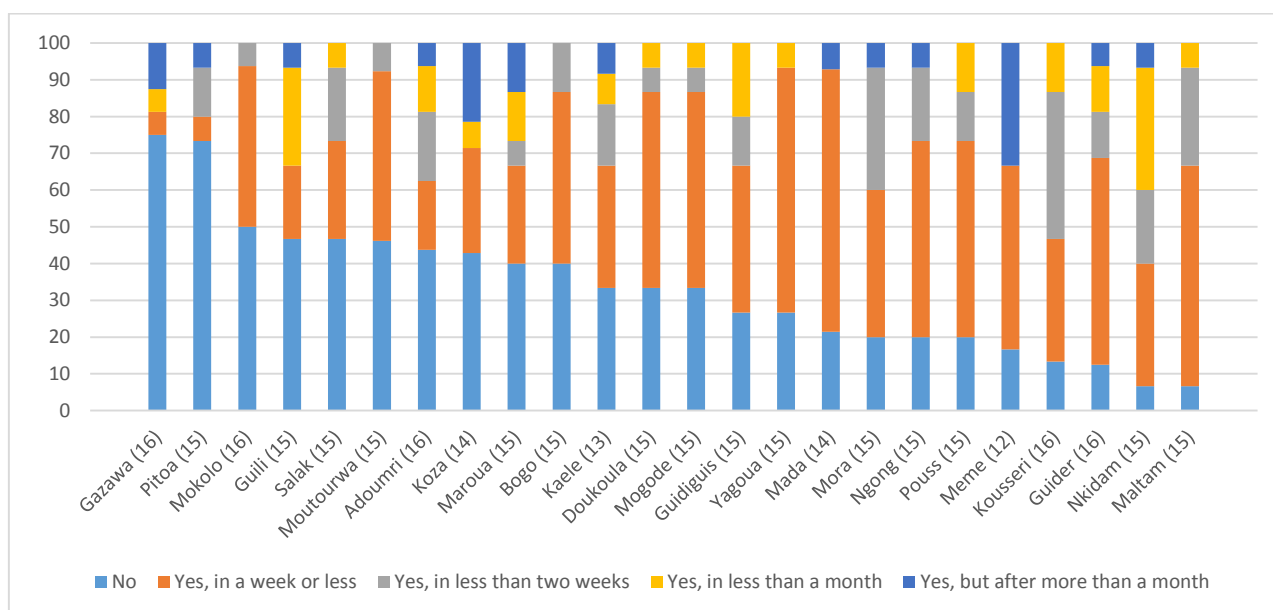
Cameroon:

In 11 Cameroonian cities out of 26, at least 40 percent of traders estimate that they would not be able to respond to a 100 percent increase in demand

Traders in Gazawa and Pitoa responded by a large majority that they cannot meet a 100% increase in demand, suggesting that there may be a risk of an inflationary effect on these specific markets should the demand double due to a cash and voucher programme (Figure 18).

In Guili, which is located along the Nigeria-Cameroon border and is one of the biggest Cameroonian city visited in terms of weekly sale, half of the retailers and 40 percent of the wholesalers claim their inability to double their supply. Cash transfer programs should be considered with caution in this market, especially if cross-border trade between Cameroon and Nigeria remain limited due to the security situation.

Figure 18: Response capacity to a 100 percent increase in demand in Cameroon



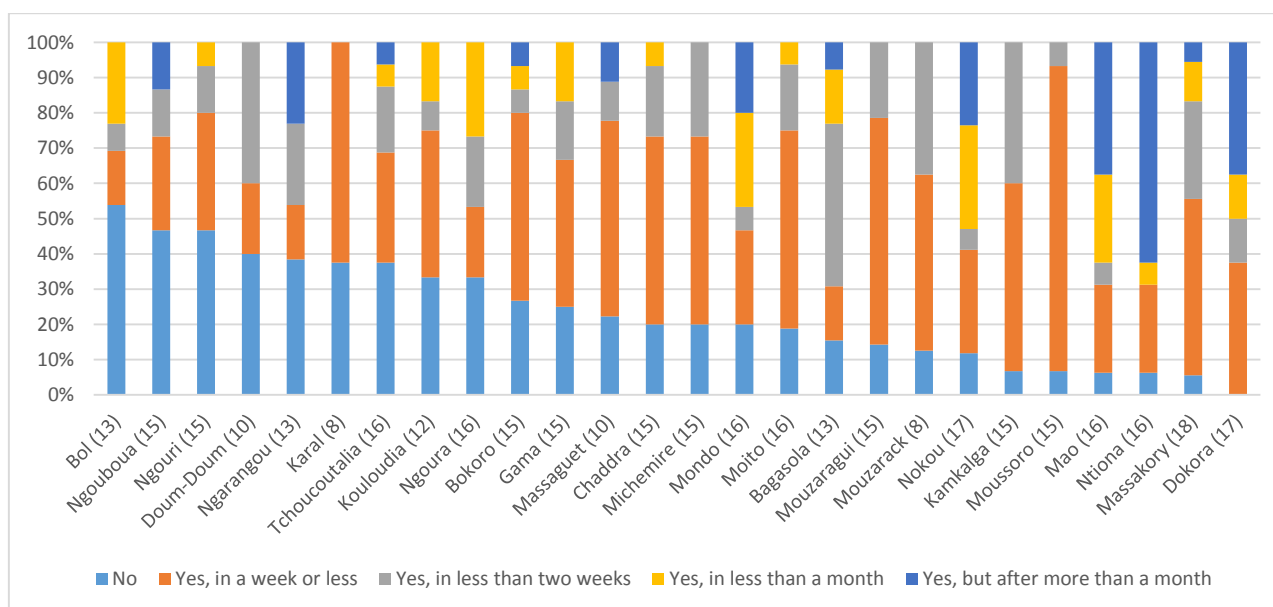
Source: Trader survey. Note: The number of traders surveyed in each city is in parentheses.

Chad:

In half of the Chadian markets, at least 40% of traders estimate to have the capacity to respond to a 100 percent increase in demand in a week. These markets are all located either in Bahr El Gazal or Hadjer-Lamis but none of them is in Lac or Kanem.

Lac appears to be a region with low response capacity. Bol, Ngouboua and Ngouri are all located in the Lac region of Chad and respectively 54, 47 and 47 percent of traders in these cities declared not being able to meet a 100 percent increase in demand. In Bol, only 15 percent of traders estimate to be able to double their supply in less than a week.

Figure 19: Response capacity to a 100 percent increase in demand in Chad



Source: Trader survey. Note: The number of traders surveyed in each city is in parentheses.

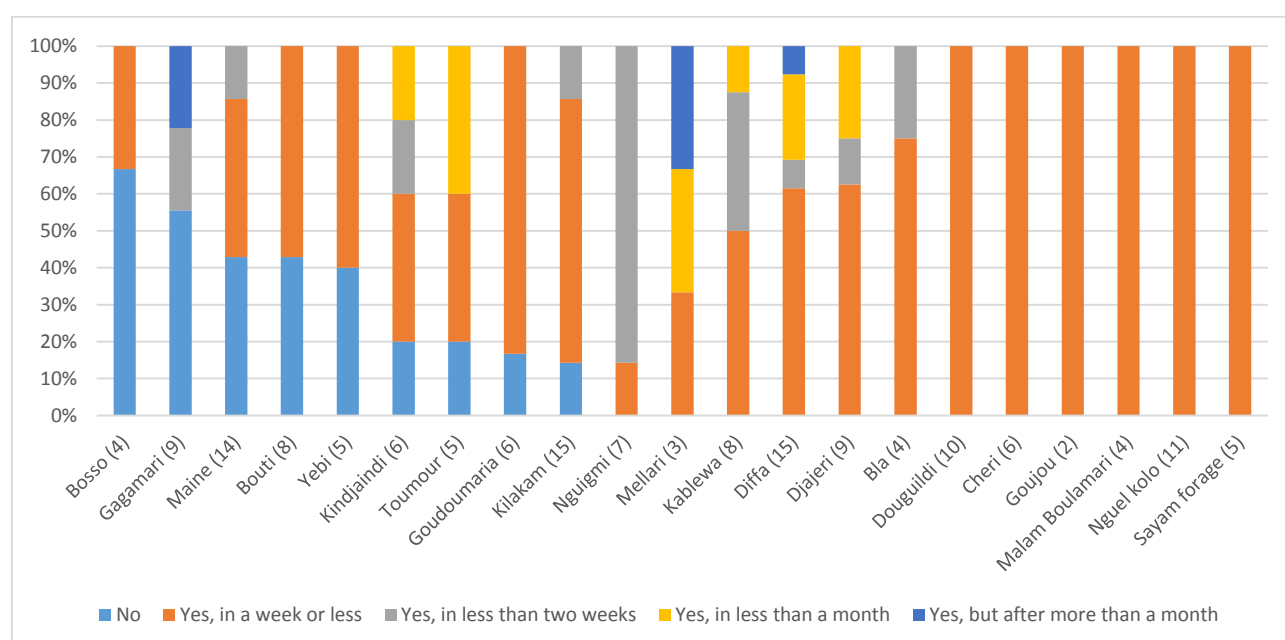
Niger:

In Niger, most cities (16 out of 21 in our sample) seem to be able to respond quickly to a large increase in demand.

Bosso, Gagamari, Maine, Bouti and Yebi are exceptions as at least 40 percent of the traders interviewed in these cities said that they would not be able to double their supply to meet a large increase in demand.

It should be noted that the number of trader interviewed by city vary greatly in Niger, from only one trader in Gueskerou (Table A1) to 15 traders in Diffa. While it is difficult to determine the required sample size by city without knowing the number of traders usually active in each market, results based on a very small sample of traders should be treated with caution.

Figure 20: Response capacity to a 100 percent increase in demand in Niger



Source: Trader survey. Note: The number of traders surveyed in each city is in parentheses.

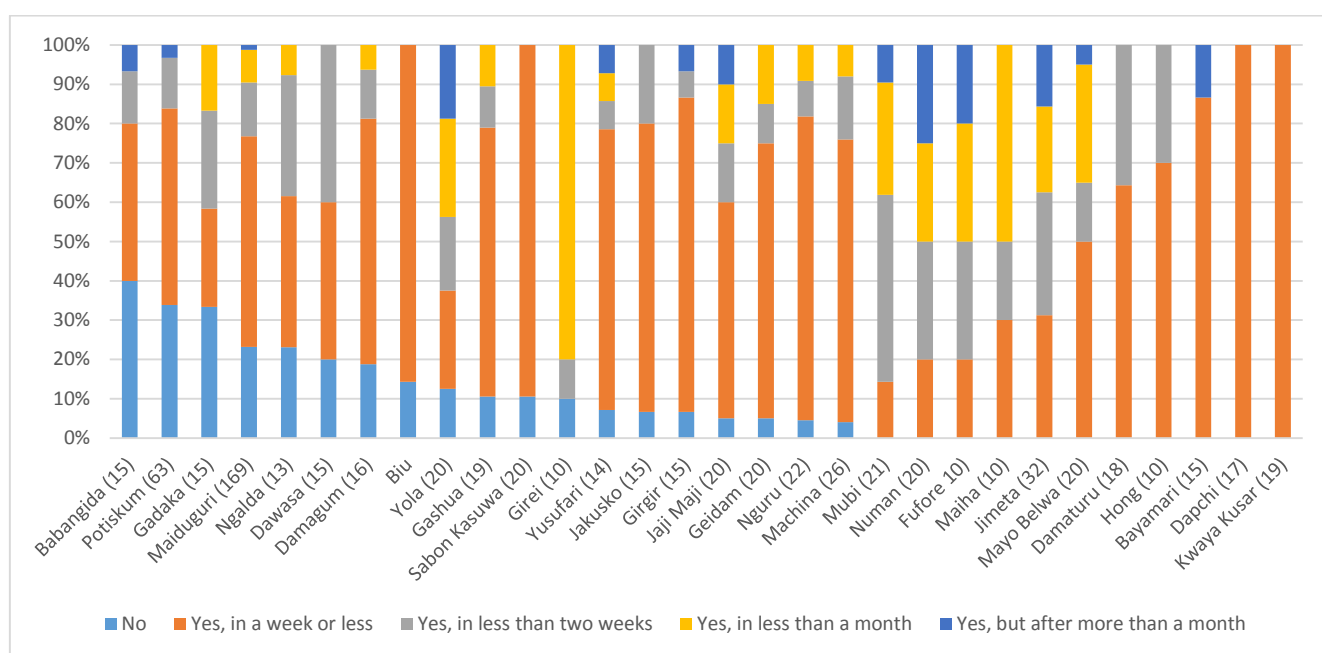
Nigeria:

Almost all the Nigerian cities surveyed seems able to meet a large increase in demand.

Babangida, Potiskum and Gadaka are the three cities where an increase in supply would be the most difficult as at least 30 percent of traders in these towns could not meet a 100 percent increase in demand.

In cities like Girei and Maiha, the response is likely to take time as respectively 80 and 50 percent of interviewed traders declared that they would need between two to four weeks to be able to double their supply.

Figure 21: Response capacity to a 100 percent increase in demand in Nigeria



Source: Trader survey. Note: The number of traders surveyed in each city is in parentheses.

11. Main constraints

Globally, the lack of own capital is the main constraint for traders.

Lack of own capital and insecurity are the two main constraints faced by traders, male and female (Table 7). Female traders seem to suffer more than male from the lack of capital and the lack of credit suggesting that women disproportionately face financial access barriers that prevent them from participating in the agricultural trade. By contrast, women are less concerned by the low margins and the decrease in customer purchasing power than men are.

In Cameroon, lack of capital is the main constraint of 71 percent of traders whereas only 41 percent of Nigerian and Chadian traders cited lack of capital as their first concern. This difference comes from the fact that insecurity is felt as the main difficulty by only 7 percent of Cameroonian traders against 12 and 17 percent of the traders in Chad and Nigeria.

Lack of own capital is a constraint especially for retailers

While lack of own capital is felt by wholesalers as their main constraints, it seems like a bigger constraint for retailers (Table 8). By contrast, wholesalers seem more concerned by insecurity. For instance, 22 percent of wholesalers in North Nigeria cited insecurity as their main constraints compared to only 11 percent of retailers. As wholesalers are in the business of buying in large quantities and selling them to resellers, they rely greatly on transporters for their supply and as shown in figure 22, transporters' activities are limited by insecurity and harassment. Similarly, poor road infrastructure and lack of transport services are constraints mainly felt by wholesalers.

In Nigeria and Cameroon, insecurity ranks second in terms of business constraints for wholesalers whereas insecurity appears only in fourth position in Chad and Niger.

Table 7: Top 10 constraints faced by traders by gender (%)

	Cameroon		Chad		Niger	Nigeria		Total	
	Male	Female	Male	Female	Male	Male	Female	Male	Female
Lack of own capital	64	80	37	56	49	40	50	44	67
Insecurity	12	3	10	17	6	15	18	13	10
Lack of credit / credit overpriced	3	6	8	7	5	7	13	6	8
Customer purchasing power failed	4	4	8	2	4	8	4	7	4
Margins too low	2	1	4	1	9	7		6	1
No refund payment of customer debts	1	1	0		1	7	6	4	2
Poor road infrastructure	2		10	5	8	1		4	1
Lack of transport services	3		8	5	2	2		3	1
Insufficient or irregular amount of product	2	2	6	4	4	2	1	3	2
High taxes or charges	2		2		2	1		1	

Source: Traders survey

Table 8: Top 10 constraints faced by traders by trader's type (%)

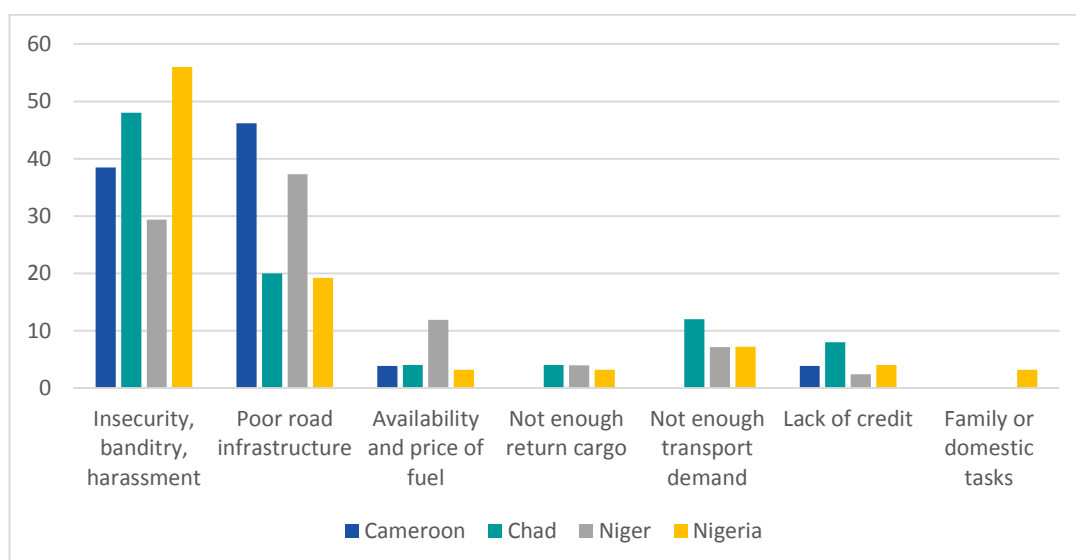
	Cameroon		Chad		Niger		Nigeria		Total	
	W	R	W	R	W	R	W	R	W	R
Lack of own capital	54	80	28	48	35	59	31	50	35	58
Insecurity	10	7	11	12	6	7	22	11	16	10
Margins too low	3	1	4	3	13	6	9	4	8	3
Customer purchasing power failed	6	3	8	6	3	5	8	6	7	5
Lack of credit / credit overpriced	6	3	7	8	4	5	7	8	6	7
Poor road infrastructure	4		12	8	16	1	1	1	5	2
Lack of transport services	3	1	14	4	1	2	1	2	4	2
Insufficient or irregular amount of product	4	1	8	4	6	2	2	2	4	2
Poor or variable quality of the product	1	1	2	1	3	1	2	0	2	1
Lack of storage structure	4			0	1	3	1	1	1	1

Source: Traders survey. Note: W stands for Wholesale and R for Retail

Transporters in Chad and Nigeria see insecurity as their main constraint whereas it is the poor state of road infrastructure, which concerns transporters the most in Cameroon and Niger.

Insecurity is a concern shared by both traders and transporters in Chad and Nigeria. More than half transporters in Nigeria cited insecurity and harassment as their first business constraint (Figure 22). By contrast, Cameroonian and Nigerien transporters are more concerned by poor road infrastructure.

Figure 22: First constraint faced by transporters (%)



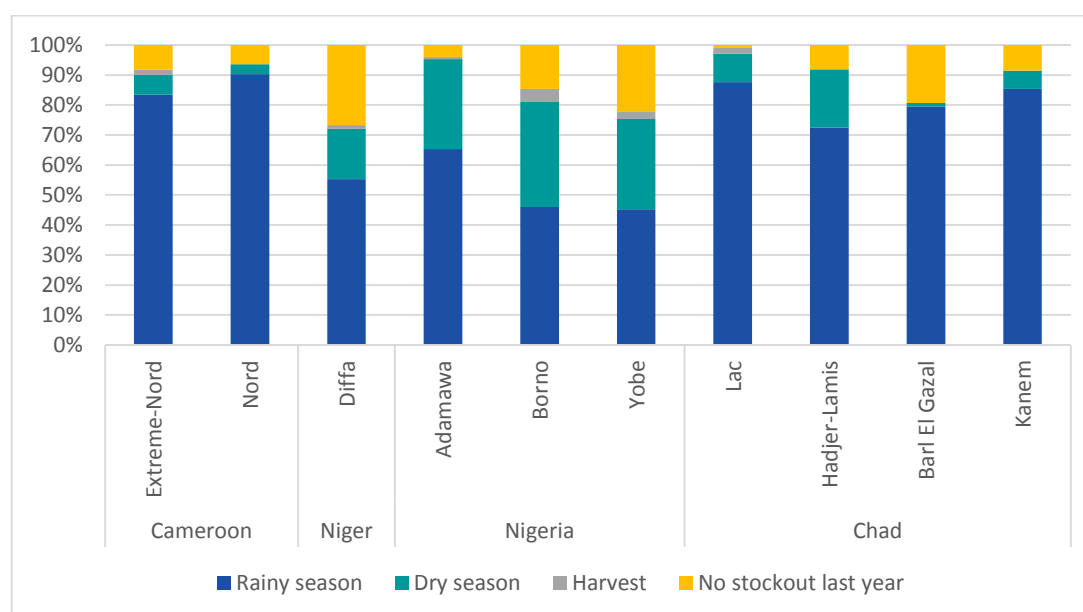
Source: Transporters survey

12. Stock strategy

Food shortages can occur during the rainy season

The rainy season is the time of the year when most traders experience food shortages, especially in Cameroon and in the regions of Lac and Kanem in Chad (Figure 23). Reasons behind can be that some roads became impassable during the rainy season and that prices go up because grain harvest is still months away. In Nigeria, food shortage can occur even in the dry season. The survey does not enable us to know the type of commodities affected by stockout but they are likely to differ between the rainy and the dry season. As outlined earlier, traders in Chad, Niger and Cameroon sell a small variety of products, implying that shortages can have stronger impact on food security and prices in this context compared to Nigeria where the offer is larger.

Figure 23: Time of the year when traders experience stockout



Source: Traders survey

Inter-seasonal storage is widely practiced in Chad and Cameroon compared to Niger and Nigeria

Only a small share - 36 percent in 2014/2015 - of wholesalers hold stocks of products from previous campaigns for reselling them later but large differences exist between countries (Table 9). In Niger and Nigeria, only 23 and 21 percent of wholesalers make inter-seasonal storage. Holding stocks is expensive and traders typically prefer to make a quick profit by buying and selling. Little inter-seasonal storage may indicate that markets are well integrated and imports easily accessible. By contrast, more than half of the wholesalers in Chad and Cameroon carry out storage. Reasons behind this storage behavior can be that wholesalers in Chad and Cameroon manage to take better advantage of seasonal price changes than in Niger and Nigeria.

Table 9: Share of wholesalers storing products from the previous campaign for reselling them later

	Cameroon		Niger	Nigeria			Chad				Total
	Extreme-Nord	Nord	Diffa	Adamawa	Borno	Yobe	Lac	Hadjer-Lamis	Bahr El Gazal	Kanem	
2014/15	62	68	23	14	23	24	54	78	8	71	36
2015/16	55	47	13	10	22	19	57	61	8	84	31
Change between 2016 and 2015	-7	-21	-10	-4	-1	-5	4	-17	0	13	-5

Source: Traders survey

Table 10: Average duration of grain storage in months during the 2014/15 campaign

	Cameroon		Niger	Nigeria			Chad				Total
	Extrême-Nord	Nord	Diffa	Adamawa	Borno	Yobe	Hadjer-Lamis	Bahr El Gazal	Kanem	Lac	
0-3 months	25	23	44	45	36	43	41	50	23	27	33
4-6 months	53	54	56	55	44	34	19	50	64	67	47
7-12 months	22	23			12	17	41		14	7	18
One year +					8	6					2
Total	100	100	100	100	100	100	100	100	100	100	100

Source: Traders survey

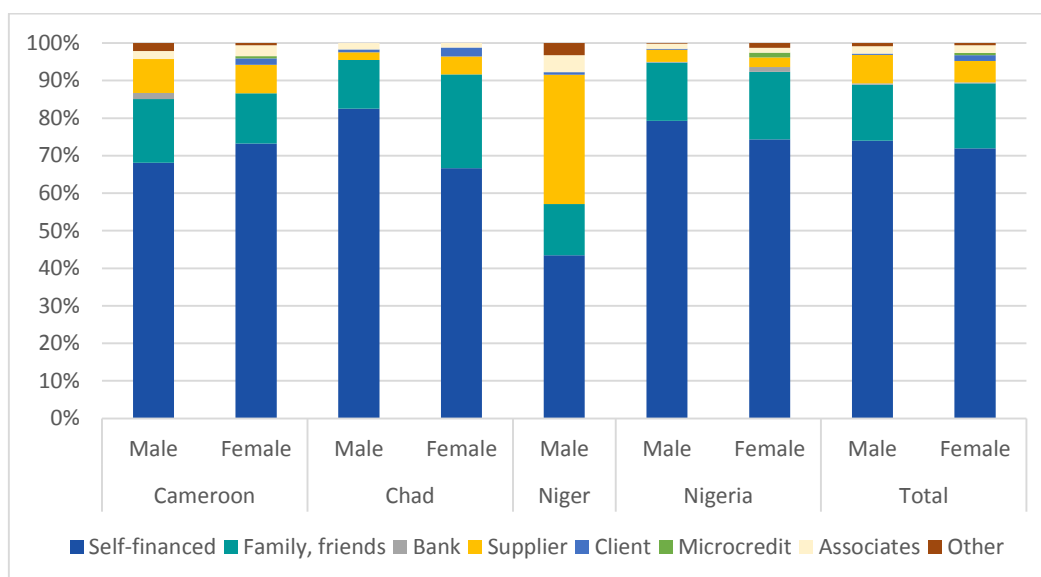
Most traders hold stocks for less than seven months, which is consistent with the seasonal pattern of prices. Harvests typically start from September, implying that traders are likely to make stocks between September and December, when prices are low and sell them between March and June when prices are up.

13. Source of funding and credit access

Self-financing is the main funding source for traders

In each country, traders are mainly self-financed. The second source of funding is usually family and friends except in Niger where 34 percent of traders depend on credit line from their suppliers (Figure 24). In Niger, social networks and ethnicity play an important role in credit provision (Aker et al., 2010). In Chad, female traders rely more on family and friends as a source of funding, as they seem not able to self-finance their activities. While half of the Nigerian traders have a bank account, almost none of them have access to formal credit. Data shows no gender gap in Nigeria in access to bank account: 52 percent of female traders reported having a bank account against 54 percent of male traders. In the remaining countries, less than 10 percent of traders have a bank account and gender imbalance is found in Cameroon with only 5 percent of women having a bank account against 12 percent of men.

Figure 24: Main source of funding for traders by gender



Source: Traders survey

Purchasing stocks on credit is common practice in Niger and Nigeria where traders' networks play a big role in agricultural trade

In Niger and Nigeria, a large share of traders purchase their stocks on credit. They are respectively 78 percent in Niger and 68 percent in Nigeria. As mentioned earlier, interpersonal networks, ethnicity and credit are closely linked in Niger and North Nigeria.

This practice is less common in Cameroon and Chad where only 37 percent of traders buy stocks on credit. The repayment terms vary between countries. While in Niger, Nigeria and Cameroon, the vast majority of traders does not pay any interest on the credit they get to buy stocks, only 39 percent of Chadian traders said that the interest rate was zero. Usually, traders are asked to repay their debt either after sales (56%) or within a week (28%). Traders typically make themselves the choice of taking out credit to finance trade activities. Data does not show any significant difference between male and female (Table B1).

Traders in Niger and Nigeria provide more credit to their customers than in Chad and Cameroon and the provision of credit to customers is more common among male traders.

Customer credit is practiced more frequently by men than women. One possible explanation may be that female traders have less access to credit and are therefore more reluctant of taking the risk of unpaid debts. The share of traders offering a credit line to customers has slightly decreased between January 2015 and January 2016. The share of traders granting credit to their customers is higher in Niger and Nigeria than in Cameroon and Chad, which may reflect a higher level of competition between shops in Niger and Nigeria. Credit supply may be a strategy used by traders to retain clients and deal with high competition.

Table 11: Share of traders selling products on credit (%)

	Cameroon		Chad		Niger	Nigeria		Total	
	Male	Female	Male	Female	Male	Male	Female	Male	Female
janv-15	58	55	50	39	71	91	86	75	58
janv-16	51	49	45	36	67	86	77	70	52
Change in percentage point between 2015 and 2016	-7	-6	-5	-4	-5	-4	-9	-5	-6

Source: Traders survey

14. Concluding remarks and suggestions

The Boko-Haram related conflict has made agricultural trade between markets in North Nigeria more difficult. The proliferation of checkpoints and roadblocks – especially in Borno state - delay the movement of food and push up the cost of trade. The conflict has disrupted trade flows and forced transporters and traders to use new trade routes. Cross-border trade between Nigeria and Cameroon, which was vibrant before the conflict has been reduced. The axis Damassack (Nigeria) – Diffa (Niger) is no longer used as transporters are forced to move west and to go through the Gashua-Geidam-Maine Soroa axis.

The situation of agricultural trade in North Nigeria has to be monitored carefully as the situation is still unstable and because the supply and demand conditions in Nigeria, especially in the northern regions, have a major influence on prices and food availability in Niger. The survey team has collected cellphone numbers of traders that can be used to conduct short follow-up interviews. Additionally, it appears important to reinforce price data collection systems in Nigeria as monitoring food prices is critical to assess the supply and demand situation of markets.

Despite the difficulties related to the conflict, most traders in North Nigeria estimate to have the capacity to absorb a 100% increase in demand, indicating that certain markets in North Nigeria have potential for market-based food assistance. However, it should be noted that the survey conducted in January and February 2016 could not visit the cities the most severely impacted by the conflict due to security reasons.

Traders' response capacity seems more limited in the North region of Cameroon and in the Lac region of Chad where almost 40 percent of traders may not be able to meet a potential increase in demand by 100 percent. Consequently, there is a risk of an inflationary effect on some markets at retail level should the demand double due to a cash and voucher programme.

Globally, insecurity is not the main constraint reported by traders as only 12 percent of traders expressed serious concern about insecurity. This figure reaches 15 and 18 percent for male and female traders in Nigeria. Insecurity is a greater concern for transporters. More than half transporters in Nigeria cited insecurity and harassment as their first business constraint.

Lack of own capital is cited by 49 percent of traders as their main business constraint. Overall, women suffer disproportionately from lack of capital as 67 percent of female traders reported it as their main business obstacle compared to 44 percent of male traders.

One of the objective of this report is to contribute to the regional gender and markets agenda by putting a special emphasis on gender dimension. Data suggests that women play a marginal role in the trade of cereals around the Lake Chad Basin, especially in North Nigeria and in the Diffa region of Niger. Most women engaged in agricultural trade are small-scale retailers with no employees, whose main constraint is the lack of capital. The discussions with WFP partners revealed that women play different roles than men in agricultural value chains in Nigeria and Niger. Women in Nigeria often participate in post-harvest processing activities such as milling, parboiling, pounding, peeling, threshing and grinding cereals (Ejembi et al., 2006) while in the Diffa region of Niger, women are involved in the trade of condiments as the trade of grains is often seen as a traditional male activity.

Retail prices of millet, sorghum and maize exhibit large seasonal variation, especially in the Lac region of Chad where the magnitude of seasonal variations is extremely high. In addition to seasonal variations, the report shows that the marketing situation can vary greatly within the same country indicating that WFP operations should take into account seasonal and geographical factors influencing market functionality. For instance, markets in Chad are characterized by high prices, large spatial price variations and high distances from supply markets that can affect market based operations.

While this survey has enabled us to collect useful information about market functioning in the Lake Chad Basin, it does not provide information about pastoralists and how livestock trade has been affected by the Lake Chad Basin crisis. Kimenyi et al. (2014) indicate that livestock markets in North Nigeria have been severely disrupted, with a high rise in cattle prices coupled with a decrease in profit from slaughtering. To the best of our knowledge, very few studies have been conducted on livestock trade around the Lake Chad Basin although livestock rearing constitutes an important livelihood in the region. An analysis of livestock trade dynamics would be useful to understand how are pastoralists affected by the crisis and what are their coping mechanisms.

Suggestions for improving questionnaire design are included in Annex C.

Bibliographie

Aker, J. C., et al. (2010). "Are Borders Barriers? The Impact of International and Internal Ethnic Borders on Agricultural Markets in West Africa." CGD Working Paper 208. Washington, D.C.: Center for Global Development.

Ejembi, E. P., S. A. Ejembi, and O. N. Abgulu. 2006. Food chain activities of women in an agrarian community in Central Nigeria: implications for rural development. *Journal of Human Ecology* 19 (1):63-67.

FAOSTAT (2016). Rome, Italy: Food and Agriculture Organization. Available from <http://faostat.fao.org>.

FEWS NET (2016). NIGERIA Food Security Outlook. February to September 2016.

Hulme, M., (2001). Climate perspectives on Sahelian dessiccation: 1973–1998. *Global Environmental Change* 11: 19–29

IFC (2011). Strengthening Access to Finance for Women-Owned SMEs in Developing Countries

IMF, (2016). IMF Staff Completes 2016 Article IV Mission to Nigeria. Press Release No. 16/72

IOM (2016). Displacement Tracking Matrix (DTM) Round IX Report - April, 2016.

Kandji, S. T., Verchot, L., Mackensen, J. (2006). Climate Change and Variability in the Sahel Region: Impacts and Adaptation Strategies in the Agricultural Sector. Word Agroforestry Centre (ICRAF), United Nations Environment Programme (UNEP)

Kimenyi, M., Adibe, J., Djiré, M., Jirgi, A.J., Kergna, A., Deressa, T.T., Westbury, A., (2014). The Impact of Conflict and Political Instability on Agricultural Investments in Mali and Nigeria. *Brook. Afr. Growth Initiat. Work. Pap.* 17.

Olivier de Sardan J-P., (2011). Aide humanitaire ou aide au développement ? La « famine » de 2005 au Niger. *Ethnologie française* 3/2011 (Vol. 41), p. 415-429

OHCHR, (2015) Report of the United Nations High Commissioner for Human Rights on violations and abuses committed by Boko Haram and the impact on human rights in the affected countries

Teravaninthorn, S., & Raballand, G. (2009). Transport Prices and Costs in Africa: A Review of the International Corridors. Washington, DC: The World Bank.

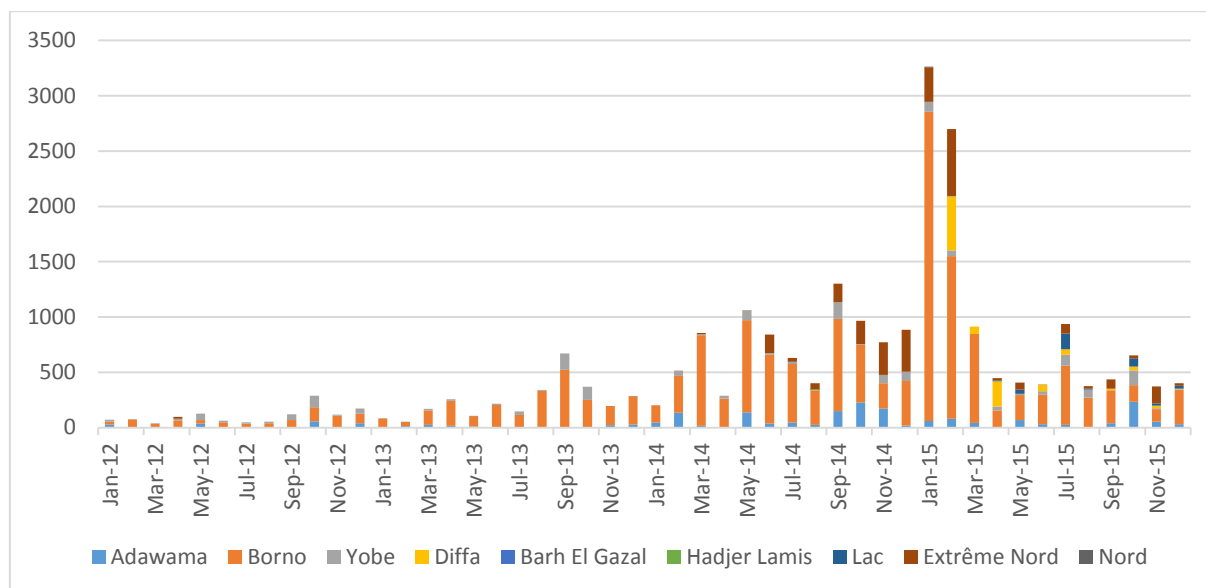
UNESCO Institute for Statistic (2016). Available from <http://data.uis.unesco.org/Index.aspx>

USDA statistics (2016). Available from <http://www.fas.usda.gov/psdonline/>

World Bank (2013). Cross-Border Trade Between Nigeria and CEMAC Countries. World Bank, Washington, DC.

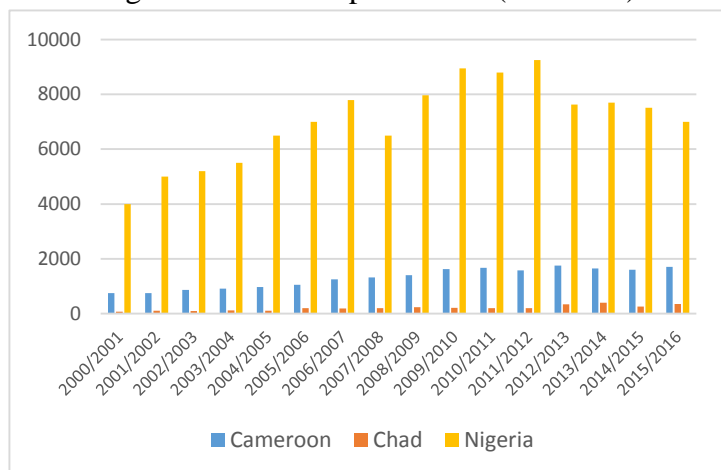
Annex A: Additional tables and figures

Figure A1: Number of reported fatalities by region



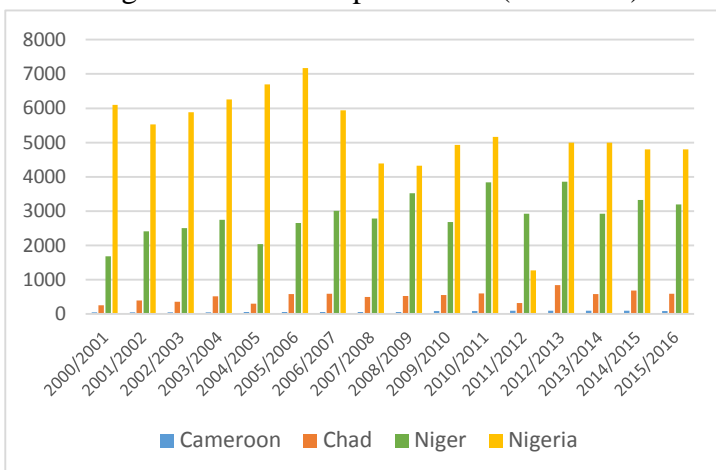
Source: ACLED

Figure A2a: Maize production (1000 MT)



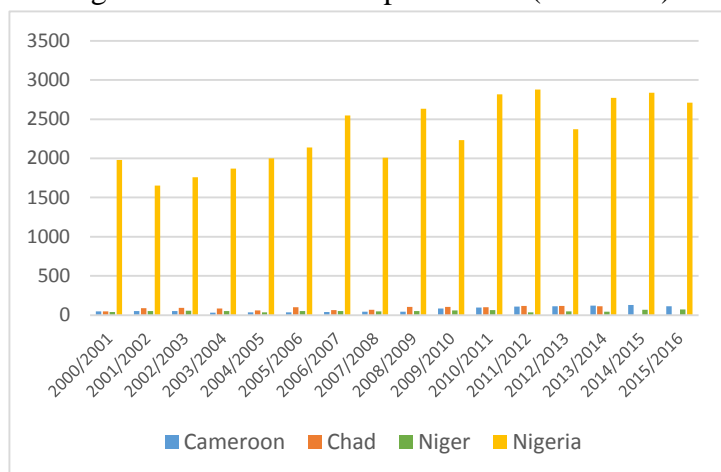
Source : USDA

Figure A2b : Millet production (1000 MT)



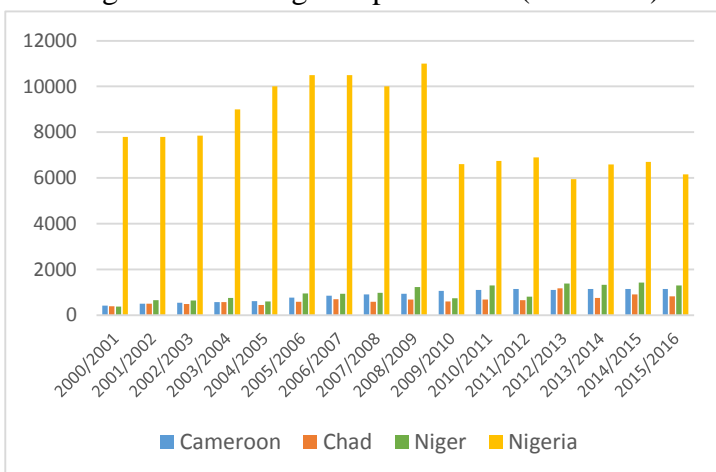
Source : USDA

Figure A2c : Milled rice production (1000 MT)



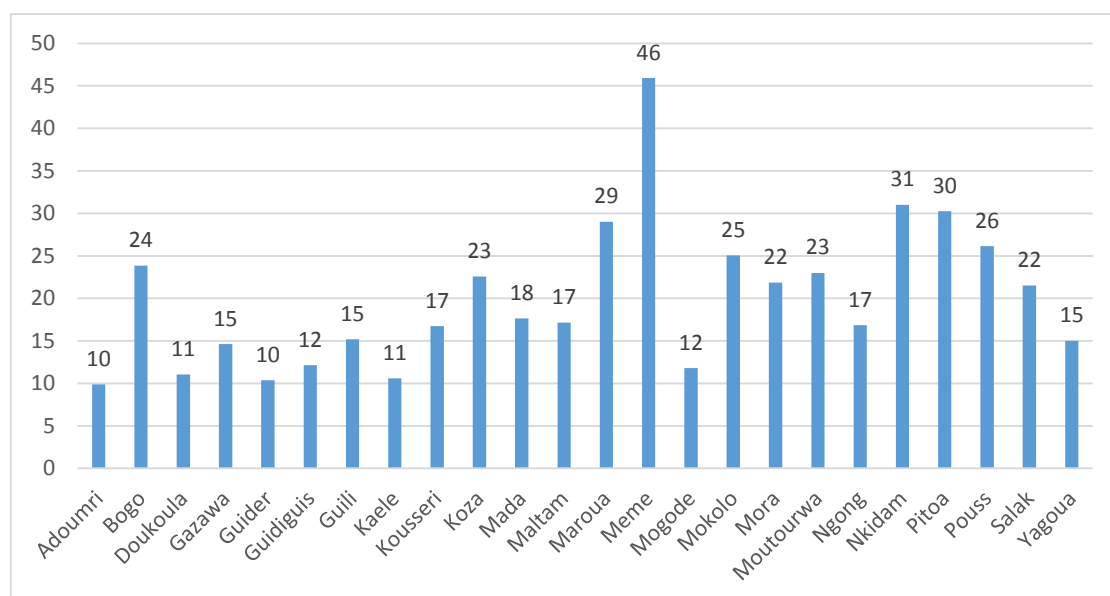
Source : USDA

Figure A2d : Sorghum production (1000 MT)



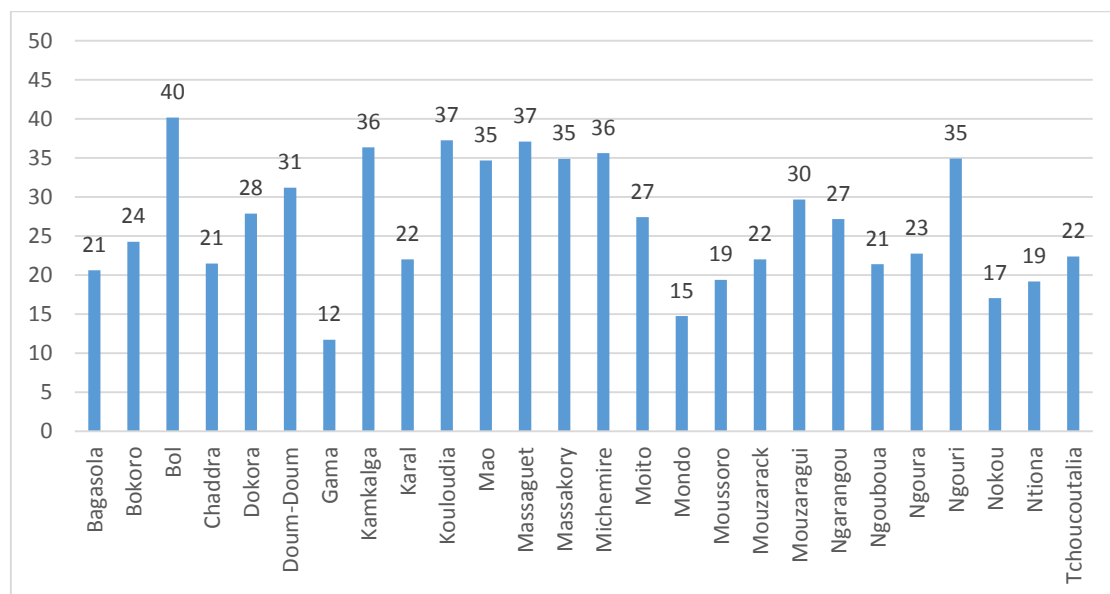
Source : USDA

Figure A3a: Average number of customer per trader per week in Cameroon



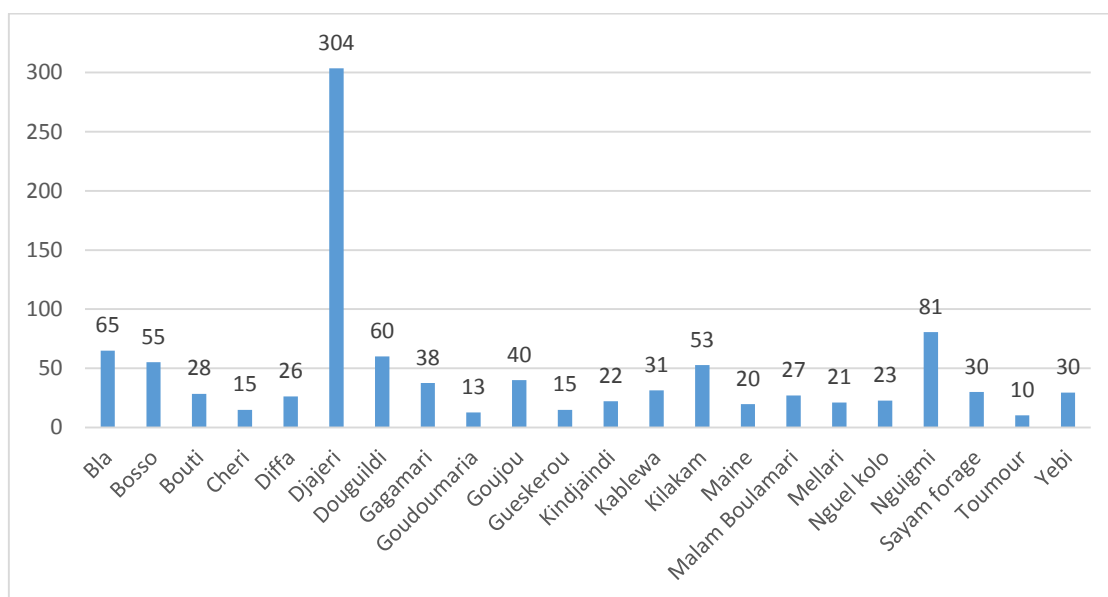
Source: Traders survey

Figure A3b: Average number of customer per trader per week in Chad



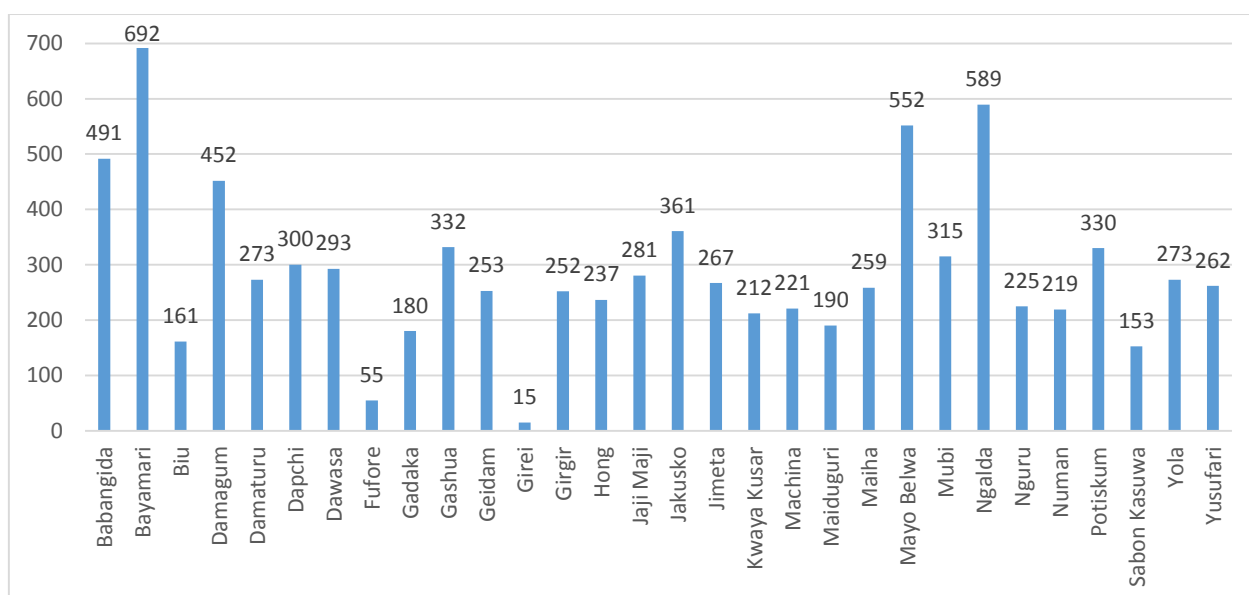
Source: Traders survey

Figure A3c: Average number of customer per trader per week in Niger



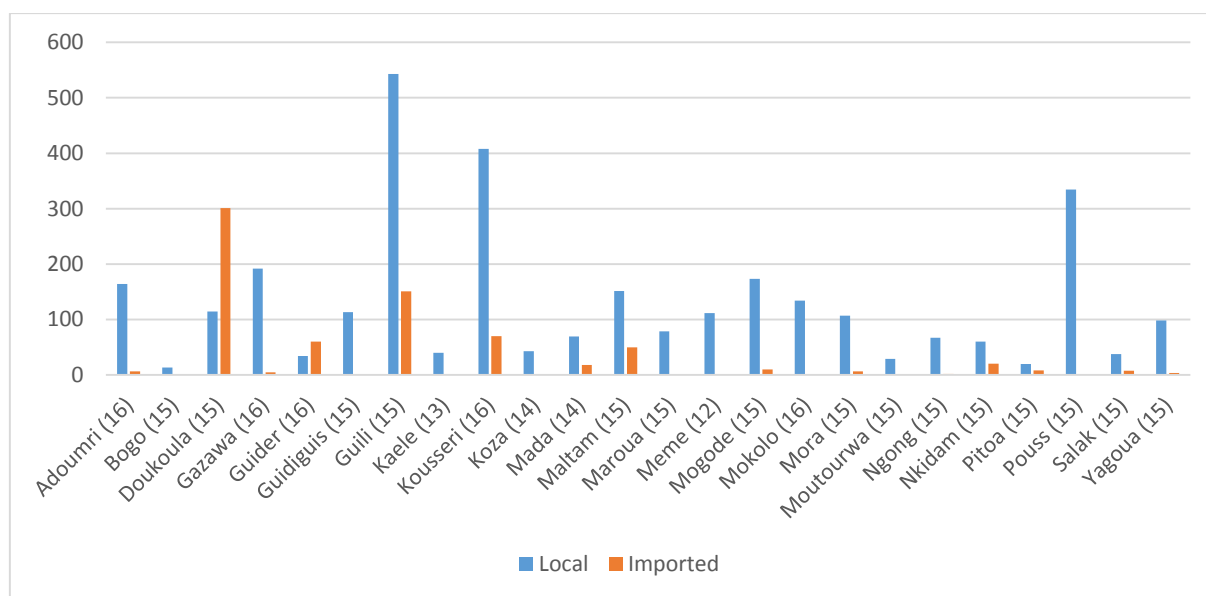
Source: Traders survey

Figure A3d: Average number of customer per trader per week in Nigeria



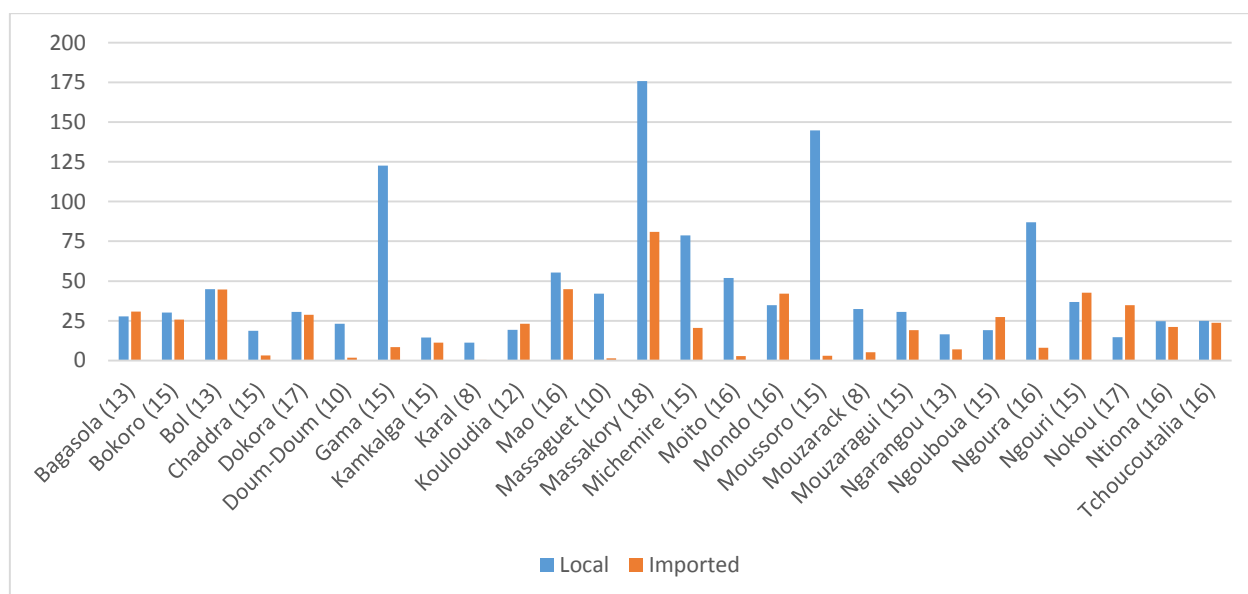
Source: Traders survey

Figure A4a: Sum of weekly sale by market for respectively the main local and imported good in Cameroon (MT)



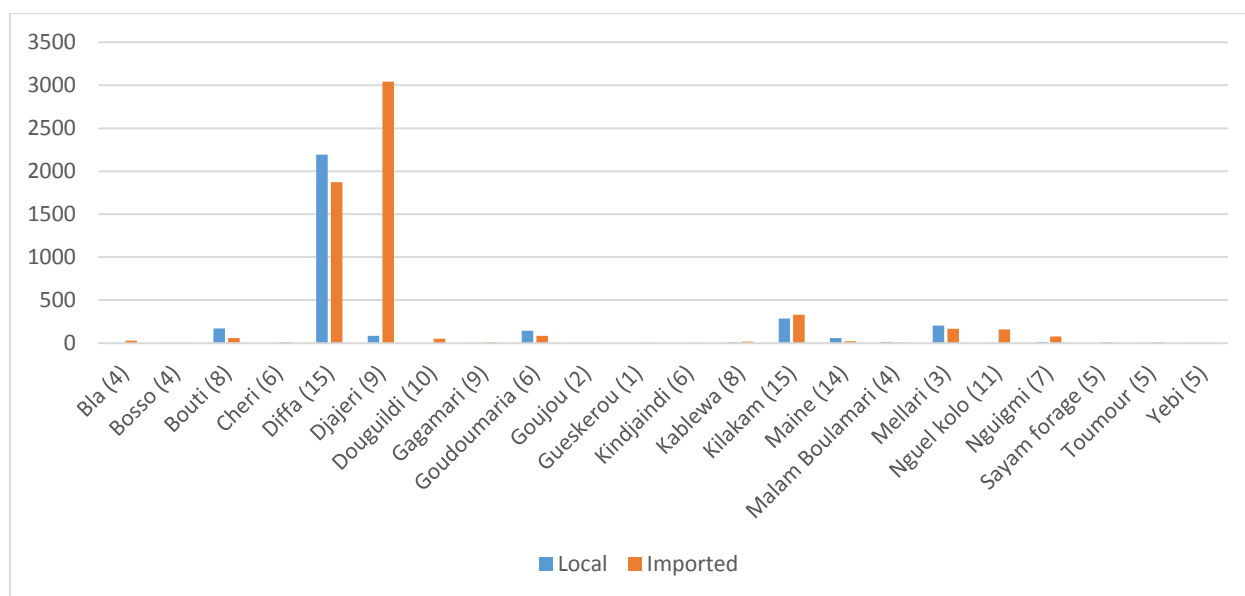
Source: Traders survey. Note: The number of traders surveyed in each village is in parentheses.

Figure A4b: Sum of weekly sale by market for respectively the main local and imported good in Chad (MT)



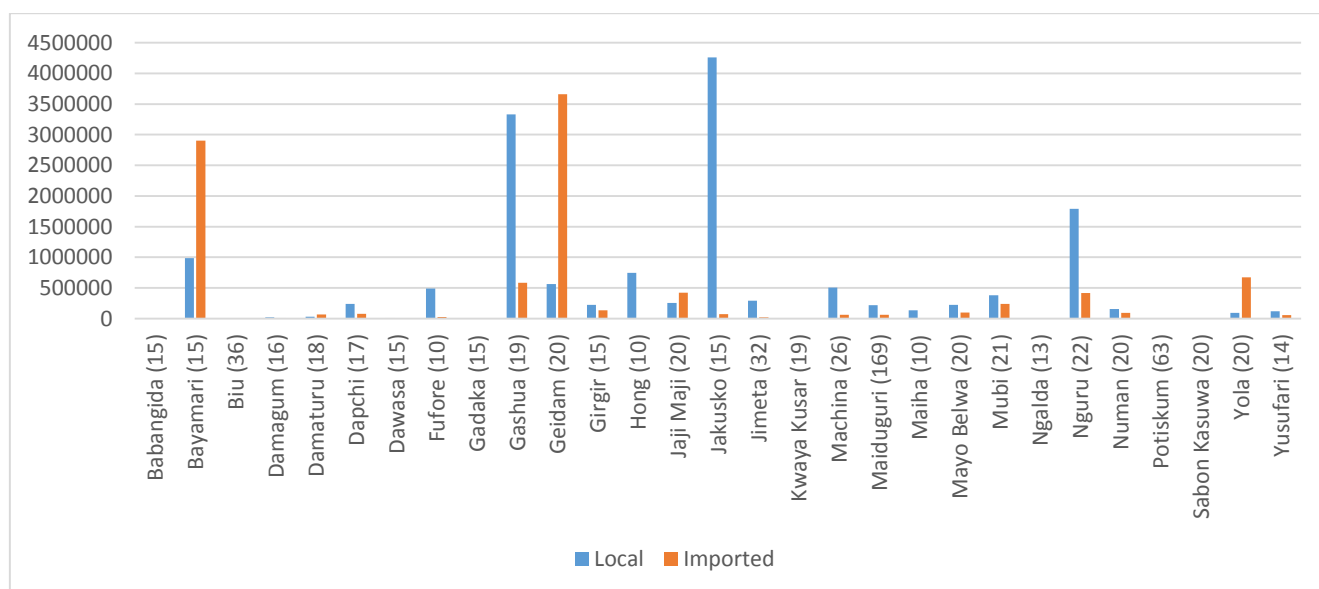
Source: Traders survey. Note: The number of traders surveyed in each village is in parentheses.

Figure A4c: Sum of weekly sale by market for respectively the main local and imported good in Niger (MT)



Source: Traders survey. Note: The number of traders surveyed in each village is in parentheses.

Figure A4d: Sum of weekly sale by market for respectively the main local and imported good in Nigeria (MT)



Source: Traders survey. Note: The number of traders surveyed in each village is in parentheses.

Table A1: Number of traders by type of trade

CAMEROON							CHAD						
Region	Cities	Traders	Retailers	Wholesalers	Assembly traders	Traders combining retail and wholesale activities	Region	Cities	Traders	Retailers	Wholesalers	Assembly traders	Traders combining retail and wholesale activities
Extrême-Nord	Bogo	15	10	4	1	0	Lac	Bagasola	13	10	3	0	0
Extrême-Nord	Doukoula	15	10	5	0	0	Lac	Bol	13	10	2	0	1
Extrême-Nord	Gazawa	16	11	5	0	0	Lac	Doum-Doum	10	6	4	0	0
Extrême-Nord	Guidiguis	15	10	5	0	0	Lac	Kouloudia	12	8	3	0	1
Extrême-Nord	Guili	15	10	5	0	0	Lac	Ngarangou	13	13	0	0	0
Extrême-Nord	Kaele	13	9	4	0	0	Lac	Ngouboua	15	9	5	0	1
Extrême-Nord	Kousseri	16	11	5	0	0	Lac	Ngouri	15	10	5	0	0
Extrême-Nord	Koza	14	10	4	0	0	Lac	Tchoucotalia	16	10	5	0	1
Extrême-Nord	Mada	14	10	4	0	0	Hadjer-Lamis	Bokoro	15	9	4	0	2
Extrême-Nord	Maltam	15	10	5	0	0	Hadjer-Lamis	Gama	15	9	5	0	1
Extrême-Nord	Maroua	15	11	4	0	0	Hadjer-Lamis	Karal	8	4	2	0	2
Extrême-Nord	Meme	12	8	4	0	0	Hadjer-Lamis	Massaguet	10	5	2	0	3
Extrême-Nord	Mogode	15	10	5	0	0	Hadjer-Lamis	Massakory	18	11	4	0	3
Extrême-Nord	Mokolo	16	11	5	0	0	Hadjer-Lamis	Moito	16	8	3	0	5
Extrême-Nord	Mora	15	10	5	0	0	Hadjer-Lamis	Ngoura	16	7	3	0	6
Extrême-Nord	Moutourwa	15	10	5	0	0	Barl El Gazal	Chaddra	15	12	3	0	0
Extrême-Nord	Nkidam	15	10	5	0	0	Barl El Gazal	Kamkalga	15	11	4	0	0
Extrême-Nord	Pouss	15	10	5	0	0	Barl El Gazal	Michemire	15	7	5	0	3
Extrême-Nord	Salak	15	10	5	0	0	Barl El Gazal	Moussoro	15	10	5	0	0
Extrême-Nord	Yagoua	15	10	5	0	0	Barl El Gazal	Mouzarack	8	4	3	0	1
Nord	Adoumri	16	11	4	1	0	Barl El Gazal	Mouzaragui	15	11	4	0	0
Nord	Guider	16	11	5	0	0	Kanem	Dokora	17	11	3	0	3
Nord	Ngong	15	10	5	0	0	Kanem	Mao	16	8	4	0	4
Nord	Pitoa	15	10	5	0	0	Kanem	Mondo	16	11	5	0	0
							Kanem	Nokou	17	10	4	0	3
							Kanem	Ntiona	16	11	4	0	1
Total		358	253	113	2	0	Total		370	235	94	0	41

Source: Trader survey

NIGER						NIGERIA					
Region	Cities	Traders	Retailers	Wholesalers	Traders combining retail and wholesale activities	Region	Cities	Traders	Retailers	Wholesalers	Traders combining retail and wholesale activities
Diffa	Bla	4	0	2	2	Adamawa	Fufore	10	5	5	0
Diffa	Bosso	4	0	3	1	Adamawa	Girei	10	3	5	2
Diffa	Bouti	8	6	0	2	Adamawa	Hong	10	4	5	1
Diffa	Cheri	6	3	1	2	Adamawa	Jimeta	32	19	11	2
Diffa	Diffa	15	10	0	5	Adamawa	Maiha	10	2	5	3
Diffa	Djajeri	9	6	0	2	Adamawa	Mayo Belwa	20	10	10	0
Diffa	Douguildi	10	6	1	3	Adamawa	Mubi	21	10	7	4
Diffa	Gagamari	9	2	7	0	Adamawa	Numan	20	10	10	0
Diffa	Goudoumaria	6	3	2	1	Adamawa	Yola	20	10	8	2
Diffa	Goujou	2	2	0	0	Borno	Biu	35	20	6	9
Diffa	Gueskerou	1	0	1	0	Borno	Kwaya Kusar	19	7	5	7
Diffa	Kindjaindi	6	2	1	2	Borno	Maiduguri	169	101	45	23
Diffa	Kablewa	8	6	0	2	Borno	Sabon Kasuwa	20	7	4	9
Diffa	Kilakam	15	9	0	6	Yobe	Babangida	15	10	0	5
Diffa	Maine	14	13	0	1	Yobe	Bayamari	15	10	5	0
Diffa	Malam Boulamari	4	3	1	0	Yobe	Damagum	16	10	6	0
Diffa	Mellari	3	1	2	0	Yobe	Damaturu	18	8	4	6
Diffa	Nguel kolo	11	3	5	3	Yobe	Dapchi	17	12	5	0
Diffa	Nguigmi	7	1	3	3	Yobe	Dawasa	15	11	3	1
Diffa	Sayam forage	5	5	0	0	Yobe	Gadaka	15	7	0	8
Diffa	Toumour	5	0	5	0	Yobe	Gashua	19	9	10	0
Diffa	Yebi	5	2	3	0	Yobe	Geidam	20	10	10	0
						Yobe	Girgir	15	11	4	0
						Yobe	Jaji Maji	20	10	10	0
						Yobe	Jakusko	15	10	5	0
						Yobe	Machina	26	19	6	0
						Yobe	Ngalda	13	6	4	3
						Yobe	Nguru	22	13	9	0
						Yobe	Potiskum	63	27	22	14
						Yobe	Yusufari	14	10	4	0
Total		157	83	37	35	Total		734	401	233	99

Table A2: Millet prices characteristics (01/2008-12/2015 in CFAF/kg)

Country	City	Region/State	Nb. Obs	Mean	Median	Min	Max	Standard deviation	Volatility
Chad	Moussoro	Bahr El Gazal	97	277	280	160	375	42	0,11
	Bokoro	Hadjer Lamis	97	227	220	149	340	34	0,13
	Massaguet	Hadjer Lamis	97	243	251	157	300	39	0,11
	Massakory	Hadjer Lamis	97	238	240	131	320	45	0,15
	N'Djamena	Hadjer Lamis	97	260	260	130	340	46	0,10
	Mondo	Kanem	97	283	280	200	380	41	0,12
	Nokou	Kanem	97	307	300	200	580	63	0,16
	Mao	Kanem	97	288	290	160	380	45	0,11
	Ngouri	Lac	97	298	280	120	605	99	0,24
	Bol	Lac	97	251	240	100	550	107	0,30
Niger	Diffa	Diffa	95	229	216	144	333	45	0,09
	Goudoumaria	Diffa	82	236	224	156	352	45	0,10
	Maine Soroa	Diffa	95	217	203	121	371	48	0,13
	Nguelkolo	Diffa	96	218	206	135	332	40	0,10
	Nguigmi	Diffa	92	262	253	192	363	42	0,07
Nigeria	Maiduguri	Borno	52	210	209	131	290	38	0,12
	Yola	Adamawa	57	186	175	148	280	29	0,07
	Damaturu	Yobe	56	191	180	152	290	30	0,07

Note: Volatility is calculated as the standard deviation of returns, where the return is defined as the proportional change in price from one period to the next. The return is generally measured as the difference in the logarithm of prices from one period to the next.

Table A3: Sorghum prices characteristics (01/2008-12/2015 in CFAF/kg)

Country	City	Region/State	Nb. Obs	Mean	Median	Min	Max	Standard deviation	Volatility
Chad	Bokoro	Hadjer Lamis	97	183	180	117	260	34	0,14
	Massaguet	Hadjer Lamis	97	169	176	94	255	36	0,19
	Massakory	Hadjer Lamis	97	182	180	110	260	34	0,17
	N'Djamena	Hadjer Lamis	97	198	200	110	300	34	0,11
	Mondo	Kanem	79	204	200	140	280	29	0,13
	Nokou	Kanem	84	218	220	160	350	35	0,10
	Mao	Kanem	97	221	220	127	350	45	0,15
	Moussoro	Bahr El Gazal	97	234	230	140	310	36	0,14
Niger	Diffa	Diffa	95	212	202	147	289	36	0,08
	Goudoumaria	Diffa	61	220	222	147	310	44	0,07
	Maine Soroa	Diffa	93	216	213	146	305	38	0,08
	Nguelkolo	Diffa	92	199	194	125	294	36	0,09
	Nguigmi	Diffa	95	234	233	179	326	29	0,07
Nigeria	Maiduguri ^a	Borno	51	196	194	134	267	33	0,09
	Maiduguri ^b	Borno	51	194	192	127	249	32	0,09
	Yola	Adamawa	57	212	205	152	293	29	0,07
	Damaturu	Yobe	57	207	201	149	313	33	0,07

Note: Maiduguri^a refers to the price of brown sorghum while Maiduguri^b is white sorghum. Volatility is calculated as in Table A2.

Table A4: Maize prices characteristics (01/2008-12/2015 in CFAF/kg)

Country	City	Region/State	Nb. Obs	Mean	Median	Min	Max	Standard deviation	Volatility
Chad	Moussoro	Bahr El Gazal	97	253	250	160	375	41	0,12
	Bol	Lac	97	185	177	85	340	55	0,18
	Ngouri	Lac	97	193	193	100	550	82	0,30
	N'Djamena	Hadjer Lamis	97	243	240	130	335	39	0,09
	Massakory	Hadjer Lamis	97	289	240	120	600	130	0,22
	Bokoro	Hadjer Lamis	95	215	204	120	650	69	0,34
	Massaguet	Hadjer Lamis	97	213	215	118	280	33	0,15
	Mao	Kanem	97	257	250	180	380	45	0,10
	Nokou	Kanem	97	265	260	180	360	45	0,09
	Mondo	Kanem	97	254	230	220	390	35	0,10
Niger	Diffa	Diffa	93	220	213	157	306	38	0,08
	Maine Soroa	Diffa	95	239	253	169	315	32	0,06
	Nguelkolo	Diffa	50	239	240	137	299	34	0,10
	Nguigmi	Diffa	92	239	242	182	339	31	0,07
Cameroon	Garoua	North	78	202	205	141	261	25	0,07
Nigeria	Maiduguri (Yellow)	Borno	52	225	218	171	330	36	0,09
	Maiduguri (White)	Borno	52	218	207	163	322	37	0,09
	Yola (Yellow)	Adamawa	57	243	247	159	350	38	0,08
	Yola (White)	Adamawa	57	230	227	159	328	31	0,10
	Damaturu (Yellow)	Yobe	57	204	191	121	346	48	0,07
	Damaturu (White)	Yobe	57	232	231	145	341	35	0,07

Note: Volatility is calculated as in Table A2.

Table A5: Rice prices characteristics (01/2008-12/2015 in CFAF/kg)

Country	City	Region/State	Nb. Obs	Mean	Median	Min	Max	Standard deviation	Volatility
Chad	N'Djamena (Imp)	Hadjer Lamis	97	492	498	350	618	51	0,08
	N'Djamena (Loc)	Hadjer Lamis	97	431	414	321	588	56	0,07
	Massakory	Hadjer Lamis	97	430	470	147	730	145	0,25
	Bokoro	Hadjer Lamis	97	524	500	200	790	111	0,24
	Massaguet	Hadjer Lamis	97	465	473	208	730	89	0,18
	Moussoro (Imp)	Bahr El Gazal	97	575	600	200	800	84	0,22
	Nokou	Kanem	97	559	560	323	600	39	0,10
	Mondo	Kanem	97	550	560	475	700	37	0,08
	Mao (Imp)	Kanem	97	530	520	225	600	61	0,13
	Bol (Imp)	Lac	97	574	560	500	800	70	0,06
Niger	Diffa (Imp)	Diffa	96	510	500	450	600	29	0,05
	Diffa (Loc)	Diffa	88	485	466	361	634	49	0,07
	Nguigmi (Imp)	Diffa	95	574	593	500	717	54	0,05
	Goudoumaria (Imp)	Diffa	82	530	529	388	609	41	0,09
	Maine Soroa (Imp)	Diffa	94	483	500	392	550	30	0,04
	Nguelkolo (Imp)	Diffa	93	521	525	434	645	44	0,05
Cameroon	Garoua (Imp)	North	78	449	450	350	507	18	0,04
Nigeria	Maiduguri (Imp)	Borno	52	554	554	409	685	71	0,06
	Maiduguri (Loc)	Borno	52	482	473	375	591	55	0,06
	Yola (Loc)	Adamawa	57	477	481	284	643	70	0,09
	Damaturu (Loc)	Yobe	57	557	576	355	831	119	0,11

Note: Volatility is calculated as in Table A2.

Annex B: Decision making process

The traders' questionnaire include several questions aimed at improving our understanding of decision-making processes of traders. The responses do not show any significant gender differences indicating that most women and men have decision-making power over their business activities.

Table B1: Who decides whether you will take out credit to finance trade activities most of the time? (%)

	Cameroon		Chad		Niger	Nigeria		Total	
	Male	Female	Male	Female	Male	Male	Female	Male	Female
Self	82	84	91	82	84	90	91	88	85
Partner/Spouse	1	7	2	2	3	2		2	4
Self and partner jointly	1	1	5	8	8	2	1	3	3
Other hh. member	1			1	4	1	1	1	1
Self and other hh. member			0	1		3	4	2	1
Partner and other hh. member	1		0	1	1			0	0
Someone outside the household		1				1		0	0
Other	2	2	0	0	1	1	3	1	1
N/A	13	5	1	4		1		3	4
Total	100	100	100	100	100	100	100	100	100

Source: Trader survey. Note: Household has been abbreviated by hh.

Table B2: Who decides how much of your generated income will be spent on food for your household most of the time?

	Cameroon		Chad		Niger	Nigeria		Total	
	Male	Female	Male	Female	Male	Male	Female	Male	Female
Self	96	93	91	88	95	93	88	93	91
Partner/Spouse	1	6	1	4	2	2	4	2	5
Self and partner jointly	1	1	5	4	3	3	1	3	1
Other hh. member	1		0	1		1	1	1	1
Self and other hh. member			0	1		2	4	1	1
Partner and other hh. member	1							0	
Someone outside the hh.			0					0	
Other	1	1	2	2	0	0	1	1	1
Total	100	100	100	100	100	100	100	100	100

Source: Trader survey. Note: Household has been abbreviated by hh.

Table B3: Who decides whether you will sell this product most of the time? (%) (For the main local product)

	Cameroon		Chad		Niger	Nigeria		Total	
	Male	Female	Male	Female	Male	Male	Female	Male	Female
Self	98	97	86	79	81	93	92	91	91
Partner or Spouse	1	2	1	5	1	1		1	2
Self and partner jointly	1	1	4	5	1	1		2	1
Other hh. member						1		0	
Self and other hh. member			0		1	1	4	1	1
Partner and other hh. member					1			0	
Someone outside the hh.						1		0	
N/A	1	1	8	12	16	2	4	5	4
Total	100	100	100	100	100	100	100	100	100

Source: Trader survey. Note: Household has been abbreviated by hh.

Table B4: Who decides at what price you will sell this product most of the time? (%) (For the main local product)

	Cameroon		Chad		Niger	Nigeria		Total	
	Male	Female	Male	Female	Male	Female	Male	Male	Female
Self	74	80	84	75	78	92	89	85	82
Partner/Spouse	4	2	2	1	1		1	2	1
Self and partner jointly	5	6	5	8	4	1	6	5	6
Other household member				1			1	0	0
Self and other hh. member		1	0			3	1	1	1
Someone outside the hh.	1		0				0	0	
Other	13	10	0	2	1	1	0	2	6
N/A	2		8	12	16	3	2	5	4
Total	100	100	100	100	100	100	100	100	100

Source: Trader survey. Note: Household has been abbreviated by hh.

Table B5: Who decides from whom/where you will purchase this product most of the time?
(%) (For the main local product)

	Cameroon		Chad		Niger	Nigeria		Total	
	Male	Female	Male	Female	Male	Male	Female	Male	Female
Self	97	96	84	80	82	94	91	91	91
Partner/Spouse	1	3	1	1		1	1	1	2
Self and partner/spouse jointly	1		6	5	1	1		2	1
Other household member					1	1		0	
Self and other hh.member			0			1	4	0	1
Partnerand other hh. Member		1							0
Someone outside the hh.		1				1		0	0
Other	1						1	0	0
N/A	1		9	14	16	2	3	5	4
Total	100	100	100	100	100	100	100	100	100

Source: Trader survey. Note: Household has been abbreviated by hh.

Annex C: Limits and suggestions for improving questionnaire design

Three different questionnaires were used for assessing the agricultural trade situation around the Lake Chad basin: a trader questionnaire, a market questionnaire and a transporter questionnaire. In theory, the trader questionnaire is divided in four modules: 1) General trader characteristics, 2) Constraint and response, 3) Storage, credit and financing and 4) Volume and supply. In practice, some questions are not in the right module, creating some confusion and leading to redundancies. For example, the first module contains questions related to storage while module 2 has two questions about supply.

In the module 2 entitled “constraints and response”, two questions are related to supply. The first one is about the time of year when traders experience stockouts and the second one is about the strategies developed by traders to cope with the price increase and / or supply problems. The difficulty is that we do not even know if traders had already experience stockout or supply problems, which lead to a high level of no response. The question related to the strategies has been let blank by the enumerators one time out of five⁶.

The questions of the last module have been asked twice: a first time for the main national product and the second time for the main imported product. The first difficulty comes from the fact that the same response modalities have been included each time, which created confusion for the enumerators: then 6 percent of the traders cited “importer rice” as their main local product and one percent said that local rice was the main imported product (Table B1). While these percentages of error does not seem very high, they cast doubt about the reliability of the data.

Asking the questions related to volume and supply for the two main commodities – without distinguishing between local and imported - would have been easier. In fact, trader survey usually include questions about the supply source of the commodities, which enable the analyst to determine if the product is local or imported. In the present survey, 14 percent of traders reported their main local and imported products to be the same. It is now impossible to assess the reliability of these response but having 4 percent of the traders whose main local and imported goods is millet is not useful in terms of analysis.

Finally, targeting the main local and imported commodities has considerably reduced the scope of the survey, as many traders do not sell imported commodities. In Cameroon, 82 percent of traders did not answer the questions related to their main imported commodities (Table B1). By contrast, in Niger 28 percent of the traders did not sell any local product as a large share of the traditional grains comes from Nigeria and is therefore considered imported.

⁶ In Niger, the level of no response to this question reach 30 percent.

Table C1: Data quality issues when traders were asked to identify the main national product and the main imported product

		Cameroon	Chad	Niger	Nigeria	Total
Main imported commodity	Share of "NA" response (%)	82	38	1	23	38
	Share of local rice (%)	2		1	2	1
Main local commodity	Share of "NA" response (%)	1	9	28	2	6
	Share of imported rice (%)	1	7	8	6	6

Trader survey

Understanding trade flows is an important objective of trader surveys but the trader questionnaire used in the regional market assessment does not include any questions about the exact supply source of the main goods. Transporters survey was used to map trade flows as the transporter questionnaire is the only questionnaire asking the name of the main supply markets. Using transporter survey to map trade flows is a second best solution as the transporter survey has a smaller sample. Additionally, it will reflect only the largest flows of goods that are carried out on trucks while some traders rely on other transport mode to get their supplies.

Although one of the objective of this survey is to assess the impact of the conflict in North Nigeria, no mention of the conflict is made in the questionnaires. The questions are either about changes that happened between 2015 and 2016 or changes experienced by traders since the start of their activities. While comparing the situation between 2016 and 2015 can help us to assess changes affecting traders in the short period, the questions about the changes experienced since the start of their activities are difficult to exploit. We know if traders have started their business i) for less than a year, ii) between one and three years or iii) for more than three years but we do not know the exact year so these questions cannot be used to assess the situation changes since the beginning of the crisis.

Additionally, taking the start of traders' activities as the counterfactual period is not relevant for seasonal activities. In the module 4, traders are asked if their sales have changed compared to the start of their activity. This question is almost impossible to exploit as sales are affected by seasonal variations. The situation in February 2016 can only be compared to the situation at the same period in previous years.

Four different teams of enumerators have conducted surveys in Chad, Niger, Nigeria and Cameroon. They all had the same questionnaires but the data shows that they did not have the same understanding of the methodology. For instance, in Chad and Cameroon, enumerators interviewed one transporters by village while in Niger and Nigeria, the sample contains an average of five transporters by village (Table B2). The different number of traders interviewed by village is not major problem for analyzing the data but it raise questions whether each team of enumerators had the same understanding of the objectives of the survey.

Table C2: Number of transporters interviewed by country

	Number of transporters	Number of villages where transporters have been interviewed
Cameroon	26	24
Chad	24	24
Niger	130	22
Nigeria	125	22

Source: Transporter survey

All rights reserved. Reproduction and dissemination of material in this information product for educational or other non-commercial uses are authorized without any prior written permission from the copyright holders provided the source is fully acknowledged. Reproduction of material in this information product for resale or other commercial purposes is prohibited without written permission. Applications for such permission should be addressed to wfp.vaminfo@wfp.org.

The designations employed and the presentation of material in the map(s) do not imply the expression of any opinion whatsoever of WFP concerning the legal or constitutional status of any country, territory or sea area, or concerning the delimitation of frontiers.

© WFP 2016

Photo credits

Front cover: WFP/Alexis Masciarelli ;

All food security assessment reports are available online: vam.wfp.org

Contact: West African VAM team

RBD.VAM@wfp.org

For further information: wfp.vaminfo@wfp.org

Website: <http://www.wfp.org/food-security>

Twitter: [@wfpvam](https://twitter.com/wfpvam)

