Emergency Food Security and Market Assessment

Ghana

June 2016

Data Collected in March 2016

WFP

World Food Programme

wfp.org

Emergency Food Security and Market Assessment in Ghana

Data collected in February/March 2016
Draft Report in June 2016

Assessment team:
Wuni Dasori: VAM Officer, wuni.dasori@wfp.org
Moses Korbli: Programme Assistant (M&E), moses.korbli@wfp.org
Raul Cumba: VAM Officer, raul.cumba@wfp.org

For more information, contact:
Mutinta Chimuka: Country Representative, mutinta.chimuka@wfp.org
Alessia Decaterina: Head of Programme, alessia.decaterina@wfp.org
Dominique Ferretti, Food Security Specialist – WFP Regional Bureau Dakar dominique.ferretti@wfp.org

ACKNOWLEDGEMENT

The Emergency Food Security Assessment (EFSA) report is the product of a joint effort led by the World Food Programme and the Ghana Ministry of Food and Agriculture.

Throughout the EFSA process, several partners and individuals contributed to the success of the survey. We would like to express our gratitude to the Regional Directorates of the Ministry of Food and Agriculture in the Northern, Upper East, Upper West, Volta and Brong Ahafo Regions of Ghana and their staff, who were key to the success of data collection for the EFSA. Throughout the survey field work, the Ministry of Food and Agriculture provided essential technical and logistical support to ensure success of the data collection exercise.

We would also like to express our sincere appreciation to Raul Cumba for his dedication to the training and coordination of the data collection for the EFSA. The staff of WFP Ghana Country Office in Accra and the Sub-Office in Tamale also made an immense contribution towards the success of the EFSA. Special appreciation goes to the management of the WFP Country Office in Accra, notably Mutinta Chimuka Country - Director, and Magdalena Moshi – Deputy Country Director, for their support throughout the EFSA exercise.

We are equally grateful to staff at the WFP West Africa Regional Bureau in Dakar for their technical support at various stages of the survey, particularly to Dominique Ferretti, Simon Renk, Matthieu Tockert, Malick Ndiaye, Mariam Katile and Eric Branckaert.

Lastly, we would like to express our profound appreciation to the 6,118 households throughout northern Ghana who spared a significant amount of their time to respond to the long list of questions posed in this survey.

WUNI DASORI AND MOSES KORBLI

Contents

List of Figures

List of Tables

List of Acronyms

AAND:	**Asante Akim North District**
AFDB:	**African Development Bank**
CBT:	**Cash-Based Transfer**
CFSVA:	**Comprehensive Food Security & Vulnerability Analysis**
COV:	**Co-efficient of Variability**
DADU:	**District Agriculture Development Unit**
DHS:	**Ghana Demographic and Health survey**
EFSA:	**Emergency Food Security Analysis**
ENVAC:	**Enhanced Nutrition and Value Chains**
GHS:	**Ghana Cedis**
GN Bank:	**Group Ndoum Bank**
GOG:	**Government of Ghana**
IMF:	**International Monetary Fund**
MDG:	**Millennium Development Goal**
MOFA:	**Ministry of Food and Agriculture**
ODK:	**Open Data Kit**
PPS:	**Probability Proportional to Size**
r-CSI:	**Reduced Coping Strategy Index**
SRID:	**Statistics Research & Information Directorate**
UNDP:	**United Nations Development Programme**
US:	**United States**
VAM:	**Vulnerability Analysis and Mapping**
WFP:	**World Food Programme**

Executive summary

The main focus of this assessment was to estimate and update the food security situation in districts within the Savanna Agro-ecological Zone of the country where the operations of WFP are concentrated. Data was collected from 6,118 households across 49 districts in five regions between February and early March 2016. However, the sample is not statistically representative for 10 districts as a result of changes made to the original sample following a verification exercise. In order to evaluate the feasibility of Cash-Based Transfers and to provide information for decision making on whether such interventions are conducive in these regions, a market assessment was also undertaken.

How many people are food insecure?

Some 15.6 percent of the assessed households in the northern regions, Brong Ahafo and Volta Regions were food insecure. Of these, 15 percent are moderately food insecure while less than one percent are severely food insecure.

Where are the food insecure households?

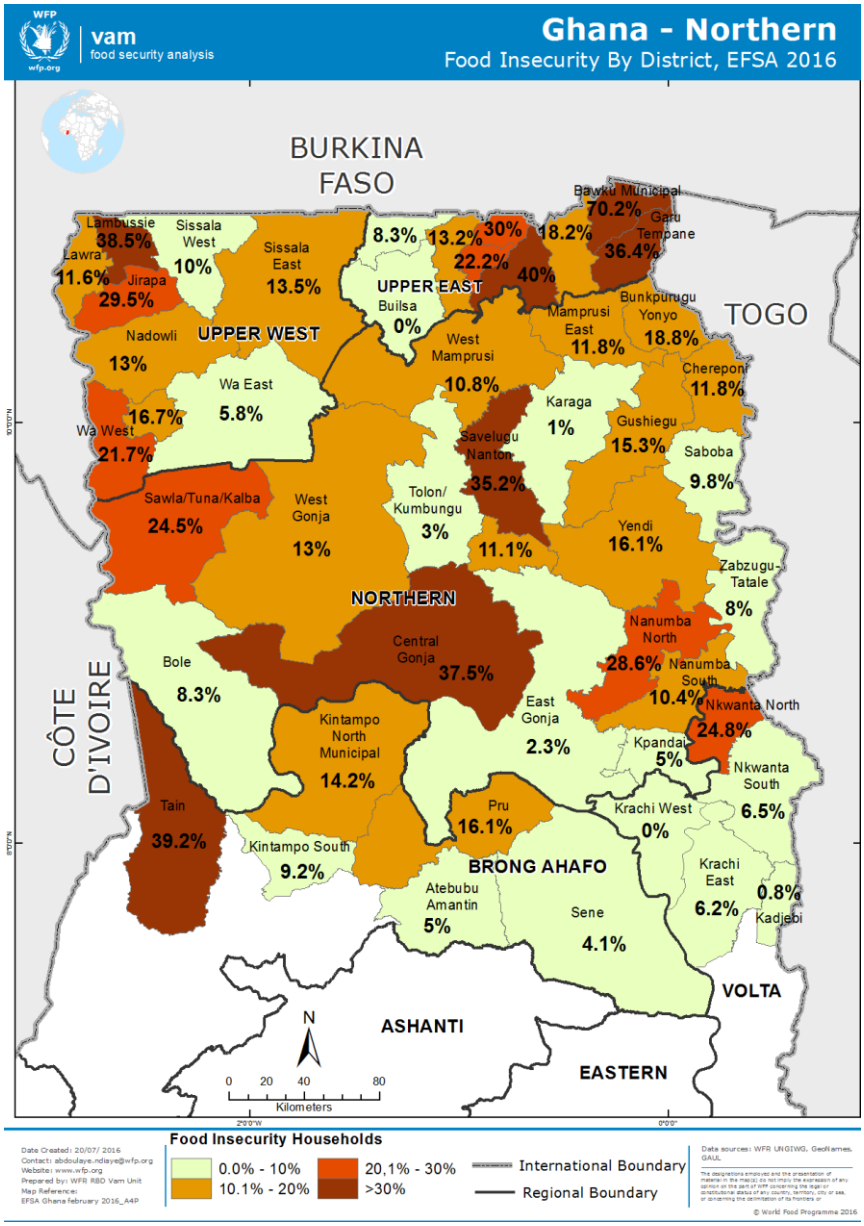
Most of the food insecure households are found in Talensi-Nabdam, Garu-Tempane, Bongo, Lambussie-Karni, Jirapa, Central Gonja, Savelugu-Nanton, Nanumba North and Tain (***Figure 1***). Three out of the 10 most food insecure districts are found in the Upper East Region and corresponds to findings of the 2012 Comprehensive Food Security and Vulnerability Analysis which found the region to be the most food insecure.

Who are the food insecure households?

Moderate and severe food insecurity tend to be associated with the following characteristics:

- **Households headed by females**: Some 21.4 percent of female headed households are food insecure compared to 15.9 percent of their male counterparts;
- **Households which experienced shocks or difficulties in the last 12 months**. Some 39.2 percent of households experienced shocks or difficulties in the last 12 months and 18.6 percent of these households are food insecure. The three most prevalent shocks include a household member being temporarily ill or injured (15 percent), drought or irregular rains (14.9 percent) and a household member being chronically ill (11.1 percent); and
- **Households which were most affected by adverse weather conditions during the 2015 growing season**. Some 44.2 percent of food insecure households cited adverse weather conditions as one of the reasons for a decrease in income during the past 12 months. The decreased harvest level and income ultimately hampered food access for these households.

Figure 1 Map of food insecurity by district



Source: EFSA 2016

Why are they food insecure?

The major challenges to food security in both rural and urban areas are intrinsically linked to the inability of households to produce sufficient quantities of staples to meet their food needs due to impoverished soils, unfavorable agro-meteorological conditions, and constrained access to inputs and limited financial resources to expand production. This assessment found that lack of fertilizer/pesticides constrained the cultivation of the households' most important crop in terms of revenue in 15.7 percent of households. Similarly, the proportion of households whose crop cultivation was constrained by lack of cash/money and lack of rains was 22.3 percent and 22.2 percent respectively. As 22.2 percent of households are classified as smallholder farmers, they do not own sufficient land to produce adequate food to meet their needs and are generally net purchasers of food. Household income and production levels are both crucial to maintaining adequate food access whether in rural or urban context and as a result of low crop production, such households remain

income poor. Thus, food insecurity in most of the affected districts is linked to the low reliance on own-produced food and greater dependence of purchased grain at very high prices.

Are market conditions favorable for the implementation of cash-based programs?

Market conditions in the five regions are characterized by substantial volatility and price increases for most staple food items, with the prices of maize, local rice and cassava all higher than five year average. In Tamale, the prices of maize, rice and cassava are currently higher than the 5-year average for May by 33.9 percent, 56.9 percent and 205.8 percent respectively. Similarly, the prices of maize, rice and cassava in Techiman are up by 87.8 percent, 201.4 percent and 411 percent respectively when compared to the five-year average for May.

In spite of the volatility in maize price and other food commodities, maize markets are generally well integrated as price signals are transmitted in other markets and brings about co-movement in these prices. The price of cassava shows greater correlation for southern markets while markets in the northern parts are least integrated. The price of local rice is also well correlated and markets are generally integrated across the country.

In the event of a substantial increase in demand, 49.3 percent of traders have the capacity to increase supply in a week or less while 28.5 percent have the capacity to meet the increased demand in less than 2 weeks. A combination of these indicators suggest that market conditions are to a large extent favorable for CBT interventions. However, due to the volatile nature of staple food prices, it is recommended that the market monitoring system should be expanded to cover all the areas where CBT is being implemented in order to allow for a regular review of the transfer value to beneficiaries.

How can they be supported/assisted?

Considering the current situation, the following recommendations are being proposed:

- Prioritize the most food insecure districts for assistance through the implementation of nutrition-sensitive interventions (such as Targeted Supplementary Feed) to reduce the level of malnutrition;
- Expand and strengthen partnerships to implement more resilience-building/asset creation programs in the most food insecure districts;
- Strengthen and expand safety net programs such as the Take Home Ration for girls to include some of the most food insecure districts;
- Use the upcoming Enhanced Nutrition and Value Chains (ENVAC) to target the most food insecure districts in the Upper East and Upper West Regions and to support smallholder farmers (particularly female-headed households) to increase local production of nutritious staple food towards reducing stunting;
- Increase advocacy with the Government of Ghana (GoG) and other relevant partners to mitigate the vulnerability of smallholder farmers to adverse weather conditions through the implementation of crop insurance schemes;
- In order to improve smallholder farmers' access to inputs such as fertilizer, WFP could consider developing partnerships with GoG through the Ministry of Food and Agriculture (MoFA) to partially pay the beneficiaries of asset creation in the form of fertilizer; and
- Considering the decreasing agricultural yields over the years, WFP and MoFA should consider reviving the northern Ghana food security monitoring system.

1. Context and Objectives of the Evaluation

1.1. Context

Ghana has a Human Development Index of 0.579 and is ranked 140 out of 185 countries[1]. While the accelerated economic growth during the past decade has contributed to the achievement of the Millennium Development Goal (MDG) of reducing poverty by half, wide spatial disparity in development and income levels remain in many regions, with the northern regions lagging far behind. Mixed success has been chalked in the achievement of MDGs such as improving access to education, reducing gender disparities in primary education and providing access to improved water sources while the targets for others like reversing the loss of environmental resources, reducing the proportion of people without access to improved sanitation and reducing maternal and child mortality were missed[2].

Nineteen (19) percent of children under 5 years of age are stunted while 11 percent are underweight. Sixty-six (66 percent) of children less than 5 years of age are anaemic while the prevalence of anaemia among pregnant women stands at 42 percent. The prevalence of stunting is highest in the Northern Region (33 percent) and lowest in the Greater Accra Region (10 percent)[3]. It is also estimated that 8.4 percent of Ghanaians is extremely poor and have insufficient resources to meet their basic nutritional needs and incidence of extreme poverty is highest in the rural Savannah areas where it stands at 27.3 percent[4].

After achieving a growth rate of 14 percent in 2011, the Ghanaian economy has been unable to sustain its growth momentum due to a number of fiscal and external imbalances. The current economic stress began to manifest in 2013 when the combined effects of the energy crisis which hit the country by mid-2012 and the decline in world prices of key commodities especially gold and cocoa gave rise to worsened external sector performance and reduction in government revenue. By the end of 2013, the combined effect of the removal of subsidies on petroleum products and utility tariffs, along with the effects of currency depreciation and the impact of the large fiscal deficit pushed the rate of inflation to 13.5 percent. In December 2014, the inflation rate rose to 17 percent while the official exchange rate of the cedi depreciated by 31 percent against the US dollar. The resulting fiscal imbalances and monetary financing of annual budgets contributed to a slowdown in economic growth and reduced real incomes and purchasing power of households as the cost of basic goods and services escalated[5].

In 2014, the economic growth rate in Ghana slowed to a five-year low of 4 percent from 7.3 percent in 2013, due to the high interest and inflation rates, depreciating currency and chronic power outages which stifled productivity in the industrial and service sectors leading to closure of factories and laying off of many workers[6].

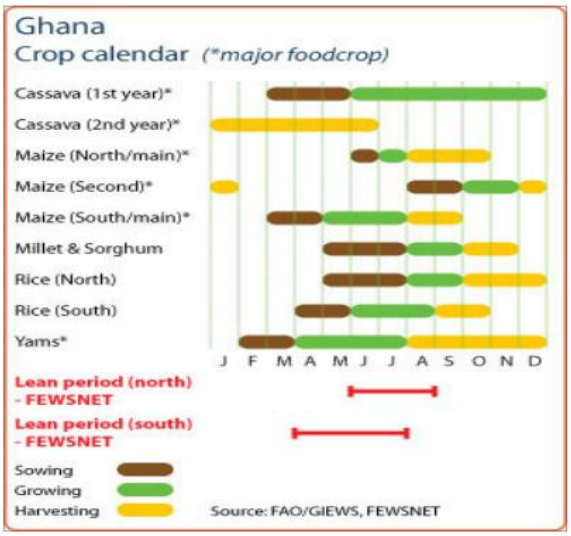
Furthermore, the hikes in utility tariffs by 59.2 percent for electricity and 67.2 percent for water in December 2015 further increased pressure on the purchasing power of households as the rate of inflation increased from 19 percent in January 2016 to 19.2 percent in March 2016. The erosion of the purchasing power of households, coupled with the rising cost of staple food commodities and high inflationary trends likely reduce food access for poor and vulnerable households across the country.

[1] UNDP,2015, Human Development Report
[2] AFDB, 2015, Ghana
[3] DHS (2014), Ghana Demographic and Health survey
[4] Ghana Statistical Service (2013), Ghana Living Standards Survey 6
[5] IMF, 2015, Ghana, Request for a three-year arrangement under the extended credit facility staff report; press release and statement by the Execute Directive for Ghana
[6] CAL Brokers, 2015, Ghana Economic Update Q1

In 2016, the economy of Ghana is projected to record a marginal growth of 4.5 percent from 3.5 percent in 2015 year[7].

These economic conditions have resulted in high cost of imported food and non-food items as well as the loss of employment and income-earning opportunities. In the agricultural sector, crop and livestock production has been significantly affected by the rising cost of inputs and animal feeds. ***Figure 2*** presents a cropping calendar for Ghana.

Figure 2 Crop calendar for Ghana



As a result of these challenging conditions and the implications on food security as well as the need for more up-to-date information to support the targeting of beneficiaries, the Ghana Country Office conducted an Emergency Food Security Assessment in early 2016. In view of the increasing shift from food-based programming to cash transfer, a market assessment was also conducted to evaluate the feasibility of Cash-Based Transfer (CBT) and to provide information for decision making on whether such interventions are conducive in these regions. The objective of the market survey is to evaluate the response of traders to possible increase in demand for staple foods as a result of the injection of cash through a CBT program.

1.2. Goal and Objectives

The goal was to assess the food security situation and evaluate market conditions in the context of Cash-Based Transfer in the five operational regions of WFP Ghana. The objectives of the assessment were to:

- Estimate and update household food insecurity at the district level;
- Evaluate traders capacity to respond to increased household purchasing power;
- Assess traders' access to credit, channels and costs; and
- Evaluate macro risk (e.g. inflation, supply shortage etc.).

[7] IMF 2016, World Economic Outlook

2. Methodology

2.1. Training of enumerators

A three-day training session for enumerators was organized in four locations. Enumerators of District Agriculture Development Unit (DADU) of the Ministry of Food and Agriculture, some of whom have previously taken part in assessments conducted by WFP were trained to collect data on the food security situation of households. Over a period of three weeks, training sessions were conducted in Tamale, Bolgatanga, Ho and Techiman. Enumerators from the Upper West and Upper East were brought together and trained in Bolgatanga. A total of 65 enumerators were trained along with 12 Supervisors from WFP and the Ministry of Food and Agriculture.

2.2. Sampling

The assessment was conducted in a total of 49 districts in the five regions. The sample design took into consideration the prevalence of food insecurity (severely and moderately food insecurity) in the three northern regions (based on the 2012 CFSVA) and the prevalence of poor and borderline food consumption for the two other Volta and Brong Ahafo regions based on the results of a WFP Food Security Assessment carried out in 2014. The sample for each district was calculated to estimate for 95 percent confidence level using the formula $1.96^2 \times (P)\ (1\text{-}P)/d^2$.

As the sample size varied for each district according to food insecurity prevalence, the number of communities sampled also varied from one district to another. At the second stage, clusters were randomly sampled in each district using Systematic Probability proportional to the actual population (PPS) based on the available data from the latest census. A total sample of 6,118 households was selected (***Table 1***).

Table 1 Number of households sampled by district

Region	Districts	Sample	Region	Districts	Sample
Northern	Bole	133	Upper West	Jirapa	183
	Bunkprugu-Yunyoo	181		Lambussie-Karni	108
	Central Gonja	277		Lawra	112
	Cherepone	17*		Nadowli	108
	East Mamprusi	204		Sissala East	156
	Guheigu	170		Sissala West	20*
	Karaga	201		Wa East	206
	Kpandai	20*		Wa Municipal	204
	Nanumba North	105		Wa West	155
	Nanumba South	144	Brong Ahafo	Atebubu-Amantin	20
	Saboba	204		Kintampo North	95
	Savelugu-Nanton	122		Kintampo South	120
	Sawla-Tuna-Kalba	200		Pru	70
	Tamale	108		Sene	122
	Tolon-Kumbungu	200		Tain	120
	West Gonja	193	Volta	Kadjebi	132
	West Mamprusi	120		Krachi East	129
	Yendi	205		Krachi West	20*
	Zabzugu-Tatale	199		Nkwanta North	149
Upper East	Bawku Municipal	121		Nkwanta South	124
	Bawku West	143	**Total**		6118
	Bolgatanga	18*			
	Bongo	20*	* Verified districts		
	Builsa	20*			
	Garu-Tempane	132			
	Kassena-Nankana Municipal	144			
	Kassena-Nankana West	144			
	Talensi	20*			

Source: EFSA 2016

2.3. Traders survey design

The market assessment was designed to cover all the five regions where the EFSA was undertaken along with the Ashanti Region where WFP is implementing Purchase for Progress activities. At least three major markets which are crucial to the market supply of food commodities in each of these regions were selected. In most cases, the selection captured all category of markets within the market system - assembly, supply and consumer markets. A total of 19 markets were selected in the six regions and a total of 526 traders were interviewed, 80 percent of them being women. The largest number of female traders were interviewed in the Northern Region where the largest number of traders were also interviewed. The objective of the market assessment was to evaluate the feasibility of Cash-Based Transfers and to provide information for decision making on whether such interventions are conducive in these regions. ***Table 2*** provides a breakdown of the traders sample by market and by region.

Table 2 Number of traders sampled by market by region

Regions	**Northern**			**Upper East**			**Upper West**			**Ashanti**				**Brong Ahafo**			**Volta**			**Total**
Markets	Tamale	Gushegu	Zabzugu	Bolga	Bawku	Fumbisi	Wa	Tumu	Lawra	Kumasi	Abofour	Nkenkaasu	Ejura	Techiman	Kintampo	Nsawkaw	Kadjebi	Nkwanta	Sibi	
Sample	49	51	26	25	24	25	26	25	25	25	26	25	26	26	25	24	25	23	25	526

Source: EFSA 2016

2.4. Data collection

Data collection was carried out between February and early March 2016. The questionnaire was programmed into tablets using the ODK platform that enabled enumerators to send the data directly to a server set up by the assessment team. In districts where the sample size was more than 140 households, a team of 2 enumerators were constituted to carry out the data collection. A team of supervisors comprising staff of WFP and the Ministry of Food and Agriculture in the five regions visited these enumerators to monitor the data collection and to provide feedback and backstopping.

2.5. Limitations of the assessment

One of the main limitations of the assessment is that it was conducted based on old district demarcations which were in existence during the last CFSVA in 2012 due to inadequate funds. Some new districts were carved out of the existing districts after the 2012 CFSVA and as a result, the assessment was not conducted using the most recent district boundaries.

Although the initial sample for the assessment was representative at the district level, the final dataset is no longer representative in some of the districts. The initial results of the assessment produced unrealistically high food insecurity scores for some ten districts across the five regions. This prompted a verification of the assessment results in the affected districts. Consequently, four clusters in each of these districts were selected, with five household interviewed in order to verify the high food insecurity figures.

In addition, two key informant interviews were conducted in each district to ascertain the level of food security challenges as it pertains to incomes, food access, food consumption and even production levels for the previous year. Both the key informant and household interviews found a much less

dramatic food insecurity situation in those districts. A decision was therefore made to utilize the data from the verification exercise in those 10 districts which represented just a fraction of the original sample.

3. Agriculture and Food availability

Agricultural production holds a central role in food security in the country as it constitute the main source of livelihood (food and income) and provides employment for 60 percent of the population. Poor access to adequate and secure land has been one of the main constraints to increased production by smallholder agriculturalists as the status of tenure has implications for investment and the application of sustainable soil management practices[8]. More than half of households (52.7) in this assessment owned the land for crop cultivation, while 27.4 percent used extended family/communal land and 15.4 accessed land through permission from the village chief.

The average size of land cultivated by farmers during the 2014 growing season was 3.8 hectares and this remained unchanged in 2015. The Northern Region had an average land size of 4.72 hectare in 2014 which appreciated slightly to 4.8 hectares in 2015. The average land size in the Upper East Region appreciated slightly from 1.8 hectares in the 2014 growing season to 1.9 in the 2015 season. The size of land cultivated in the Upper West decreased slightly in 2015 compared to the previous. The apparent stagnation in the area cultivated over the past 2 seasons coupled with the decrease in harvest suggest that agriculture productions require adequate investment and expansion to guarantee an increase in food supply.

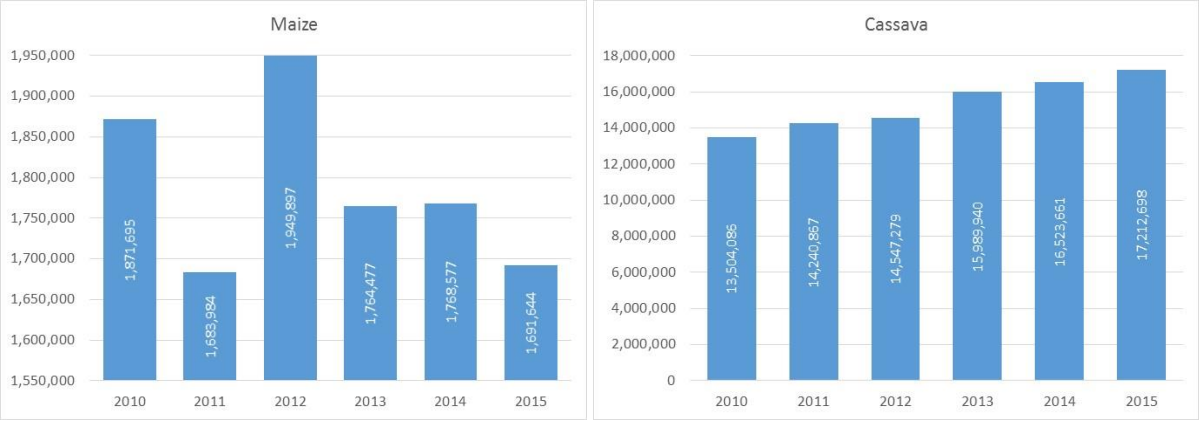
Food availability in Ghana is attained through a combination of domestic production of major staples such as maize, yam, cassava and rice and significant importation of rice. As maize, rice and cassava are the three most important staples most commonly consumed across the country, the analysis of food production and availability over the past six years focuses on these staples.

In spite of the rapid growth in the country's population, the production of maize has been falling since 2012 largely due to unfavorable agro-meteorological conditions. Maize production decreased by -9.5 percent from 1,949,897 metric tons in 2012 to 1,764,477 in 2013 (***Figure 3***). It further decreased by -4.3 percent from 1,768577 metric tons in 2014 to 1,691,644 metric tons in 2015, leaving stocks at -13.2 percent below the level for 2012.

While paddy rice production has increased from 481,133 metric tons in 2012 to 641,492 in 2015, it has been able to meet just 40 percent of the rice consumption needs in the country with the remaining 60 percent being met through imports[9]. The increasing per capita rice consumption resulted in the importation of an additional 417 metric tons of rice in 2014[10]. In 2015, the estimated rice imports in Ghana was 500,000 metric tons and in the first four months of 2016 alone, Ghana imported 135,000 metric tons of Jasmine rice from Vietnam, representing a 60 percent increase over the same period in 2015[11]. The depreciation in the value of the Ghanaian Cedi has contributed to an increase in the cost of rice imports and the retail price of imported rice in the domestic market.

[8] Kuusaana, E. D. and Bukari, K. N. (2015) Land conflicts between smallholders and Fulani pastoralists in Ghana: Evidence from the Asante Akim North District (AAND) in Journal of Rural Studies.
[9] Ministry of Food and Agriculture (2015) Provisional Crop Production Estimates for 2015, SRID, Accra.
[10] USDA Foreign Agricultural Service (2014), Grain and Feed update
[11] USDA (2016), Grain: World markets and trade

Figure 3 National maize and cassava production for 2010 to 2015



Source: MoFA/SRID

National level production of cassava has grown steadily since 2012 as the crop has become increasingly popular with households in the southern parts of the country. Further increase in the production of cassava is likely in the coming years as the crop has been increasingly used in the commercial production of beer.

4. Results

4.1. Food security situation in Northern Ghana, Brong Ahafo and Volta Regions

The results of the assessment in the five regions indicate that **15.6 percent** of households are food insecure. Of these**, 15 percen**t are **moderately** food insecure while less than **1 percent** are **severely** food insecure. The level of food insecurity is highest in the Upper East Region at 20.7 percent and lowest in the Volta Region at 10.1 percent (***Figure 4***).

The prevalence of food insecurity has increased in two of the three northern regions which were included in the 2012 CFSVA. The level of food insecurity increased from 9 percent in the 2012 CFSVA to 14 percent in 2016 in the Northern Region while the prevalence in the Upper West Region increased from 16 percent in 2012 to 18 percent in 2016. Although the Upper East Region remains the most food insecure in northern Ghana, the proportion of food insecure households actually decreased from 28 percent in 2012 to 20.7 percent in 2016. In four out of the five regions, a higher proportion of female-headed households are food insecure as compared to their male counterparts. In the Volta Region however, a marginally higher proportion of male-headed households (10.2 percent) are food insecure compared to their female counterparts (9.8 percent).

It should be noted that whilst the 2012 CFSVA was conducted at the start of the lean season in May, the food security assessment in 2016 was conducted in February during a period households would generally be expected to have good stocks of food. Considering the level of household food insecurity at the time of the assessment in 2016, the prevalence could be much higher in May. At the time of the assessment, food access was already constrained in 48.2 percent of the households that suffered poor crop yield during the 2015 growing season due to erratic rainfall pattern.

Figure 4 Food security groups by regions

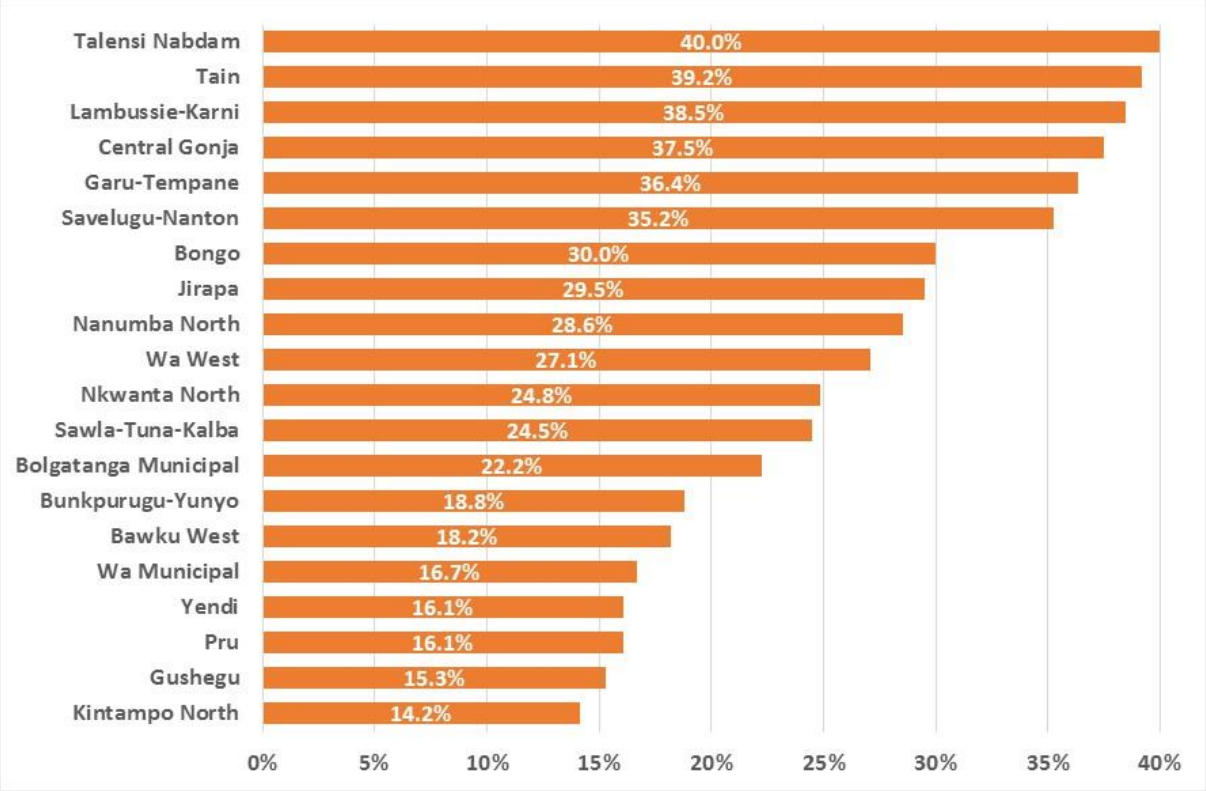
Source: EFSA 2016

The level of food insecurity ranged from 0 percent in the Builsa district to as high as 40 percent in the Talensi-Nabdam District both in the Upper East Region[12]. The top ten most food insecure districts are **Talensi-Nabdam, Tain, Lambussie-Karni, Central Gonja, Garu-Tempane, Savelugu-Nanton, Bongo, Jirapa, Nanumba North, and Wa West** (***Figure 5***).

[12] A food insecurity score of 70 percent for Bawku Municipal is considered an outlier

Three of the 10 most food insecure districts are in the Upper East Region. The Wa West, Central Gonja and Talensi-Nabdam were also found to have high level of food insecurity in the 2012 CFSVA and the continuing high food insecurity levels in those districts implies the situation has become chronic. High prevalence of food insecurity has also been found in the Nanumba North District which was the least food insecure in the 2012 CFSVA.

Figure 5 Top twenty most food insecure districts



Source: EFSA 2016

Even in districts where the prevalence of food insecure is currently low, there is greater risk of many more households becoming food insecure during the lean season. In Tamale Municipality, Lawra and Krachi East, more than 60 percent of households are marginally food insecure and many of those households could move into moderate and severe levels of food insecurity due to shocks and changes in their access to food during the lean season.

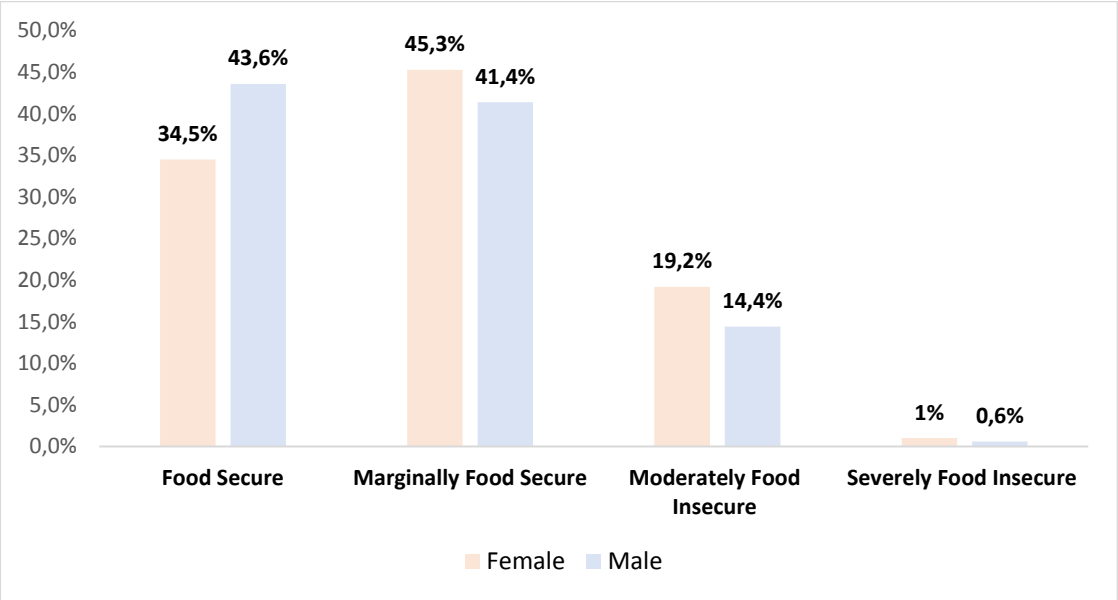
4.1.1 Who are the food insecure

4.1.1.1 Female headed households

Some 20.2 percent of female-headed households in the five regions are food insecure compared to 14.4 percent of their male counterparts (***Figure 6***). As agriculture is the main source of livelihood, food insecurity among female-headed household is linked to limited access to land and agricultural inputs as control over essential natural resources rest with their male counterparts. By virtue of the unequal access to resources (such as land, credit and extension services), their ability to produce enough and gain adequate access to food is constrained. Female headed households are mostly involved in agricultural production (45 percent), trading (20.1 percent) and agro-pastoral (19.8 percent) activities. Although they constitute just 11 percent of the households in the assessment, a large proportion of female headed (61 percent versus 53 percent of male-headed households) households are engaged in the use of distress coping strategies due to lack of food or money to buy food.

Among the reasons for the decrease in the harvest of food crops over the previous year, a larger proportion of female-headed households pointed to limited access to inputs and lack of financial resources to expand production. Some 7.3 percent of female-headed households are smallholder farmers, cultivating less than 2 acres compared to less than 1 percent for their male counterparts.

Figure 6 Food security groups by gender

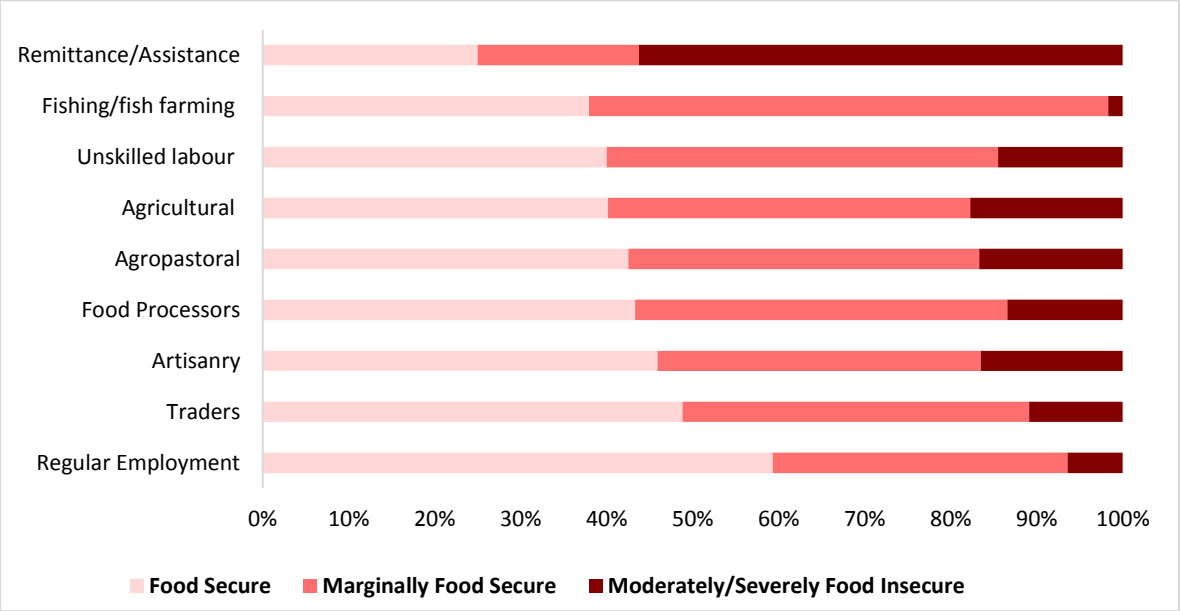


Source: EFSA 2016

4.1.1.2 Agriculturalist

Some 16.9 percent of households in this livelihood group are food insecure (***Figure 7***). Agriculturalists constitute the largest livelihood group in the five regions owing to the predominance of agriculture as a source of sustenance in those regions. Some 54.3 percent of households in the assessment are in this livelihood group where agriculture contributes 92 percent of their income. Thirty-five point nine (35.9) percent of the food consumed by this livelihood group comes from households' own production while 57.8 is through market purchase. The Northern and Brong Ahafo Regions have the largest share of agriculturalist households (62.4 and 65 percent respectively) while the Upper East has the lowest proportion of households in this livelihood group

Figure 7 Livelihoods by food security groups



Source: EFSA 2016

4.1.1.3 Agro-pastoralist

Nearly seventeen (16.9) percent of households in this livelihood group are moderately food insecure and less than one percent (0.8) are severely food insecure. This livelihood group makes up 27.1 percent of the total households in the five regions. The proportion of households involved in this livelihood activity varies significantly across the five regions with the proportion of households reaching 60.9 percent in the Upper East Region and 42.6 percent in the Upper West Region. Fifty-two (52) percent of the income contribution to this livelihood comes from agriculture while 45 percent is from livestock. This livelihood group has the largest proportion of households with access to own-produced food (39.9 percent). Fifty-five (55) percent of their food is obtained through market purchase. The food sources for livelihood groups is presented in ***Table 3***.

4.1.1.4 Traders

Some 10.3 percent of trader households are moderately food secure while 0.6 percent are severely food insecure. Traders are the third largest livelihood group in the five regions. Fifty-seven (57) percent of the income contribution to this livelihood comes from trade while agriculture and livestock contributes 36 and 6 percent respectively. Within the regions, the largest proportion of traders are found in the Brong Ahafo and Volta Regions where they constitute 13.8 and 10.1 percent of households respectively. Up to 70.8 percent of the food consumed by traders is purchased while 24.6 percent is derived from own-produced stocks.

4.1.1.5 Artisans

Some 15.9 percent of artisan households are moderately food insecure while 0.6 percent are severely food insecure. Fifty-seven (57) percent of the income contribution to this livelihood comes from artisanary while another 35 percent is obtained from agriculture. Some 24.8 percent of the food consumed by these households is from own-produced stocks while 70.1 percent is obtained from market purchase with cash.

4.1.1.6 Food processors

Some 13.4 percent of households in this livelihood group are food insecure. Forty-five (45) percent of the contribution to this livelihood is through food processing while 48 percent comes from agriculture. Within the Volta region, food processors are the second largest livelihood group after the agriculturalists in view of the importance of processing cassava into gari and other products. Nearly thirty-one percent (30.9) of the food consumed by this livelihood group is from own-produced food stocks while 63.6 percent is obtained from market purchase with cash.

Other livelihood groups affected by food insecurity include fishermen/fish farmers, unskilled labourers, regular employees and households reliant on remittance/assistance. Food insecurity among households whose livelihood is based on regular employment is 6.4 percent, compared to 14.5 percent for unskilled labourers and 1.7 percent for households that rely on fishing. Some 56.3 percent of households whose livelihood is based on remittance/assistance is food insecure. However, households in the remittance/assistance livelihood group constitute just 0.3 percent of the sample or 18 households and in view of the very small sample, it cannot be concluded that this livelihood group is the most food insecure.

Table 3 Livelihood groups by sources of food

	Own production (crops, animal)	Fishing / hunting	Gathering	Market (purchase with cash)	Market (purchase on credit)	Food aid from civil society, NGOs, government, WFP, etc.	Gift (food) from family relatives or friends	Others*
Agriculture	35,9%	2,5%	1,4%	57,8%	1,0%	,0%	,7%	,7%
Regular employment	17,6%	0,4%	1,6%	78,7%	,9%	,1%	,6%	,2%
Artisanry	24,8%	1,7%	1,2%	70,1%	,9%	,1%	,9%	,2%
Remittance/Assistanc	18,2%	3,9%	2,6%	61,0%	2,6%	,0%	11,7%	,0%
Agropastoral	39,9%	2,6%	0,5%	55,0%	1,0%	,1%	,8%	,3%
Fishing/fish farming	20,1%	9,0%	0,0%	68,8%	2,0%	,0%	,0%	,2%
Unskilled labour	26,3%	1,8%	0,7%	67,4%	,7%	,0%	1,7%	1,3%
Food processors	30,9%	1,0%	3,0%	63,6%	1,0%	,0%	,4%	,1%
Traders	24,6%	1,2%	0,6%	70,8%	1,6%	,0%	1,0%	,2%

* Beg for food, exchange labour or items for food and food aid from civil society, NGOs

Source: EFSA 2016

4.1.2 Food consumption and diversity of foods consumed

Food insecure households are generally characterized by high consumption of cereals and tubers and limited consumption of fruits, meat, pulses and other food items. Severely food insecure households consumed staples for a maximum number of seven days, but did not consume fruits or dairy with equally limited consumption of meat/fish and pulses (***Table 4***). The diets of these households are therefore not adequate in terms of nutritional content and increase the occurrence of diet-deficient health risk in those households.

The main difference between severely food insecure and moderately food insecure households is that moderately food insecure households have slightly better consumption of vegetables, pulses, and meat/fish which give those households a little more diversified diets than severely food insecure households.

Food secure households and households with marginal food security have much better diets. Meat/fish is consumed for 6 days compared to 4.5 days by marginally food secure while vegetables are consumed for 5 days by food secure households which is the same number for marginally food secure households. Food secure households therefore have better consumption of meat and fish, pulses and fruits as compared to household with marginal food security.

Table 4 Consumption of different food items by food security groups

	Average number of days food is eaten in a week							
	Cereal, tubers and root crops	Meat and fish	Pulses	Vegetables	Oil	dairy	Fruits	Sugar
Severely Food Insecure	7	0,2	0,5	2,1	2	0	0	1,3
Moderately Food Insecure	7	0,8	1	3	2,4	0	0,3	1,6
Marginally Food Secure	7	4,5	2,3	5	3,4	0,6	0,9	3
Food Secure	7	6,1	2,6	5,8	3,8	1,0	1,1	4

Source: EFSA 2016

4.1.2.1 Sources of food

Market purchase is the main source of food for households in all five regions with more than 50 percent relying on this source to meet their food needs. This is in spite of the fact that the assessment was conducted mostly in February and March when most households were generally expected to have food stocks from the last harvest in November/December. More than 30 percent of households relied on own-produced grains in the Northern, Upper East, Upper West and the Brong Ahafo Regions while the proportion of households for the Volta Region was 23 percent (***Table 5***).

The high market dependence by households for their food needs implies that many of them could be highly vulnerable to market shocks and as a result, the increasing prices of food commodities in the country increases pressure on the purchasing power of those households and reduces food access for the very poor ones.

Table 5 Sources of food by regions

	Market (purchase with cash)	Own production (crops, animal)	Fishing / hunting	Gathering	Market (purchase on credit)	Exchange labour or items for food	Others*
Northern	64,1%	30,6%	2,8%	,5%	1,3%	,1%	,6%
Upper East	64,4%	33,5%	,8%	,0%	,8%	0,0%	0,5%
Upper West	58,0%	35,2%	2,2%	1,2%	,8%	1,0%	1,6%
Brong Ahafo	64,9%	30,6%	,8%	1,9%	,7%	,2%	1,0%
Volta	71,2%	23,0%	,9%	3,1%	,7%	,5%	0,6%

*Beg for food, get from family and assistance from government, NGOs

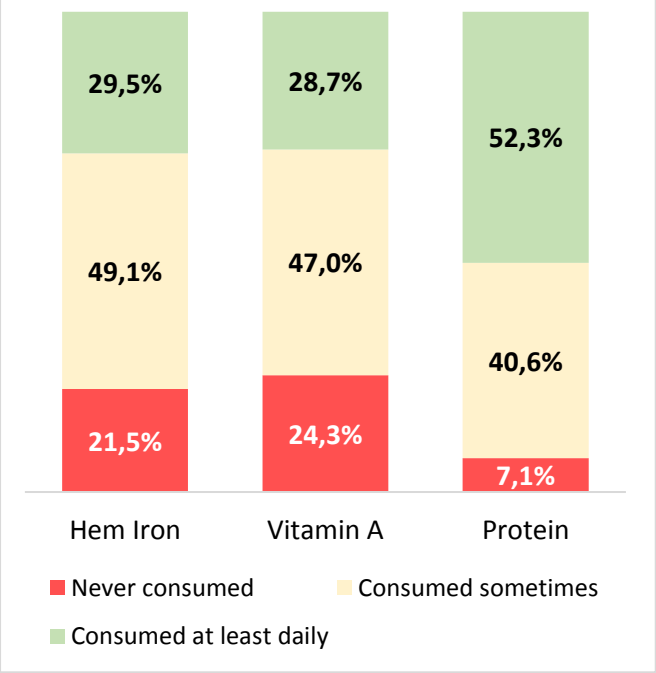
Source: EFSA 2016

4.1.2.2 Nutritional quality of foods consumed

The nutritional value of diets consumed by households is evaluated based on the consumption of food groups which are rich in Vitamin A, Proteins and Hem Iron. Understanding the nutritional adequacy of the foods consumed helps to improve our understanding of the link between household food consumption and nutritional outcomes and could feed into decision-making on nutrition-sensitive programming.

Overall, more than half of households (52.3 percent) consumed protein rich foods at least once daily. However, a high proportion of households are not also consuming enough Vitamin A rich food and are thus at risk of micronutrients deficiency (***Figure 8***). Similarly, some 21.5 percent of households do not consume iron rich foods which could expose such households to the risk of iron deficiency anaemia at the height of the lean season when the food consumption generally expected deteriorates.

Figure 8 Nutritional quality of food items consumed



Source: EFSA 2016

At the regional level, some 50.3 percent of households in the Brong Ahafo Region along with 25.3 percent in the Northern Region, 18.3 percent in the Volta, 18 percent in the Upper East and 17.3 percent in the Upper West Region have never consumed Vitamin A rich foods. As a result, the risk of micronutrients deficiency is very high in all the five regions. For protein rich foods, 15.4 percent of households in the Upper East region never consumed such foods while 46.1 percent of households in the region sometimes consumed this food which suggests heighten risk of under nutrition as compared to the other regions. Although the Upper West Region has a low proportion of households who never consumed protein-rich foods (5.1 percent), the high proportion of households who sometimes consume this food is also reflective of high risk of under nutrition especially among children.

In relation to the prevalence of food insecurity and the consumption of nutrient rich foods, most households with severe food insecurity never consumed protein, Vitamin A and Hem Iron rich foods. In fact, the proportion of severely food insecure households who do not consume these foods are 62.8 percent for vitamin A rich foods, 74.4 percent for protein rich foods and 86 percent for Hem Iron rich foods. Consequently, severely food insecure households are not only at heightened risk of under

nutrition and micro-nutrients deficiency, but also iron deficiency anaemia. Households with moderate food insecurity generally face similar micro-nutrients deficiency although the proportion of households affected is much lower as compared to households with severe food insecurity.

4.1.3 Coping strategies

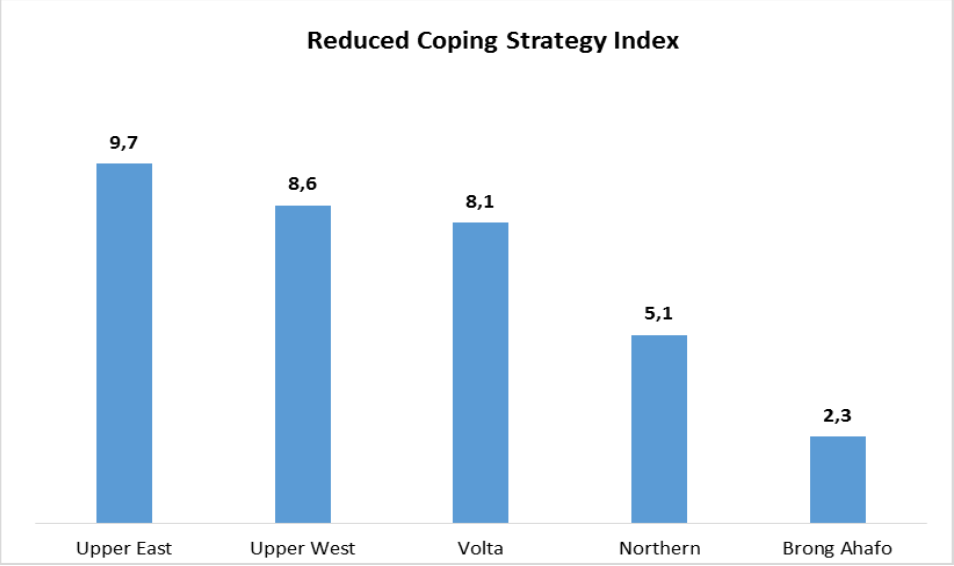
4.1.3.1 Consumption-based coping strategies

Some 54.2 percent of households employed consumption-based coping strategies as a result of the lack of food or money to buy food during the seven days preceding the assessment. The apparent lack of food or money to purchase is partly the result of very low staple stocks from the last cropping season. The most commonly employed coping strategy was reliance on less preferred/less expensive foods followed by a reduction in the number of meals consumed in a day.

Regional level analysis suggest that the reduced CSI is higher in the Upper East (9.7) and Upper West Regions (8.5) than the other regions (***Figure 9***). At the district level, Garu-Tempane, Bawku West, Bunkprugu-Yunyo, Lambussie-Karni, and Nanumba North are the top 5 districts with very high reduced CSI score. This implies that households in these regions and districts are using more frequent and more severe coping strategies relative to the others and are therefore more vulnerable to food insecurity than their counterparts in other regions and districts.

The use of consumption-based coping strategies varies significantly among the food security groups. Some 86 percent of severely food insecure households used coping strategies, compared to 65 percent for moderately food secure and 62 percent for marginally food secure.

Figure 9 Reduced Coping Strategy Index (r-CSI) by regions



Source: EFSA 2016

4.1.3.2 Livelihood-based coping strategies

The assessment found that 29.7 percent of households used stress coping strategies, mostly by selling non-productive animals, spending savings or borrowing money to buy food. Nineteen (19) percent resorted to the use of crisis coping strategies such as reducing non-food expenditure on health and education, selling household assets and withdrawal of children from school while 8.3 percent of households used emergency coping strategies.

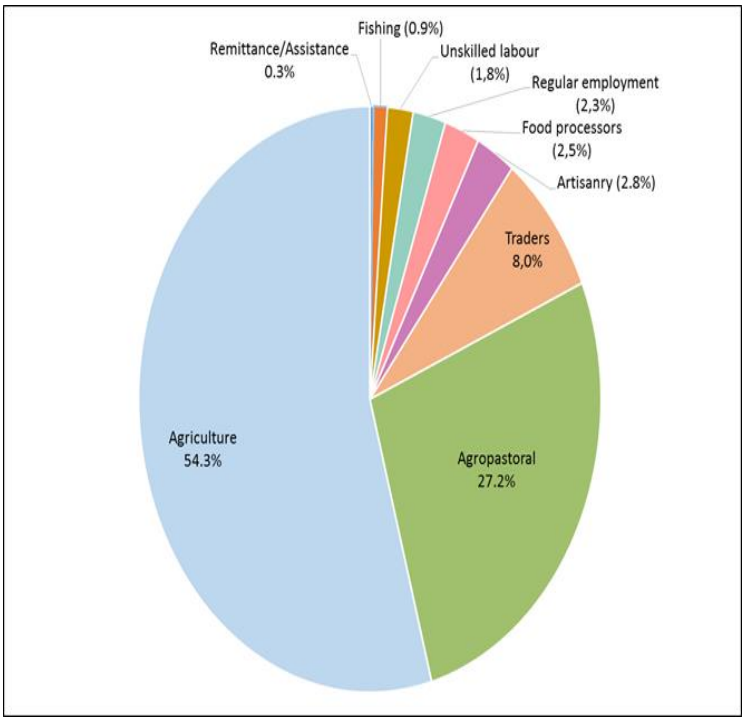
The Upper East and Upper West Regions had the largest proportion of households that used stress coping strategies (32.9 and 42.7 percent) while emergency coping strategies were used to a greater degree in Upper West (13.8 percent) and Volta Regions (11.2 percent). Similarly, the Volta Region had the largest proportion of households using crisis coping strategies (33.9 percent). The widespread employment of asset depleting strategies by households just a few months after a major harvest suggests that these households would likely face greater challenges in accessing food during the lean season.

The large proportion of households that used stress coping strategies is also an indication that those households have reduced ability to deal with future shocks due to a reduction in their resources. Similarly, the crisis coping strategies employed have implications for future productivity. Many of the ways in which those households in the five regions would be affected by these asset depletion strategies include a reduced ability to purchase inputs for the next farming season and inability to meet essential food and health expenditure.

4.1.4 Livelihood strategies of the survey population

The predominance of agriculture as a source of livelihood for households in the five regions demonstrates how food security outcomes in these areas are largely affected by the level of the households' food production. The livelihoods of households were assessed by gathering information on the three key activities pursued to earn income or food. A cluster analysis was conducted to assign households to livelihood groups that exhibit similar characteristics and on the basis of the relative contribution of each activity to the livelihood. ***Figure 10*** presents the livelihood groups in the five regions.

Figure 10 Livelihood groups

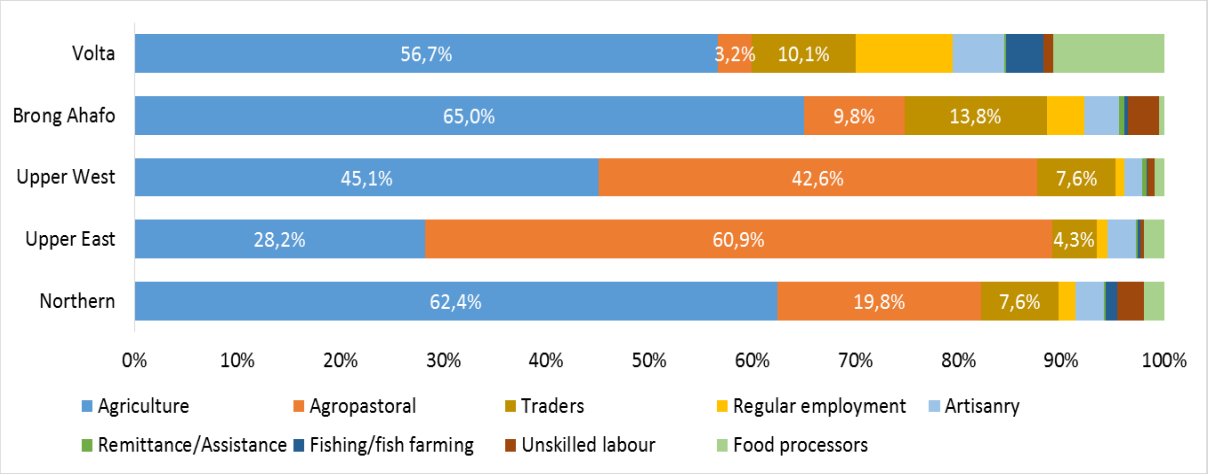


In all, a total of 9 livelihood groups were identified. The agricultural and agro-pastoral livelihood groups constitute the two most dominant groups in the five regions. In the Northern Region, 82.2 percent of households are in the agricultural and agro-pastoral livelihoods groups compared to 89.1 percent in the Upper East Region and 87.7 percent in the Upper West Region. In the Brong Ahafo and Volta Regions, the combined proportions of agricultural and agro-pastoral households are 74.8 and 59.9 percent respectively (***Figure 11***).

Source: EFSA 2016

Eight (8) percent of households is engaged in trading/commerce with the largest proportion of this livelihood group found in the Brong Ahafo (13.8 percent) and Volta Regions (10.1 percent).

Figure 11 Livelihood groups by regions



Source: EFSA 2016

4.1.5 Causes of food insecurity

4.1.5.1 Shocks

Some 39.2 percent of households experienced shocks or difficulties during the last 12 months. Of those who experienced these shocks, 18.6 percent are food insecure. About 57.7 percent of these households are in the Northern Region compared to 17.1 percent in the Upper West and 11.5 percent in the Upper East. The three most prevalent shocks include a household member being temporarily ill or injured (15 percent), drought or irregular rains (14.9 percent) and a household member being chronically ill (11.1 percent). Twenty (20) percent of households which were affected by drought or irregular rains are food insecure.

Some 35.8 percent of households who were affected by shocks adapted a number of measures to compensate for the loss in income or assets. The three main ways in which households compensated for the loss in income or assets were by borrowing money (29.9 percent), selling animals (23.4 percent) and spending savings (14.2 percent). By adapting such measures, these households have a reduced ability to deal with future shocks due to the reduction in their available resources. As a result, such households could face highly constrained access to food at the height of the 2016 lean season when food prices are at their highest level for the year. These affected households are mostly involved in agricultural (50.8 percent) and agro-pastoral (34.3 percent) livelihood activities and are largely (88.4 percent) in the three northern regions. Some 53 percent of the households which adapted these measures also experienced a reduced harvest of their most important crop in terms of revenue as compared to the previous year.

4.1.5.2 Insufficient funds and poor access to inputs

The large proportion of smallholder households who cultivate small acreage and have low food stocks have limited ability to generate enough income to meet various needs, including adequate funds to increase agricultural production. Some 15.7 percent of household could not access inputs such as fertilizer which is crucial to improving agricultural production in the regions of the assessment while lack of funds to support investment in agriculture also affected 22.3 percent of households.

4.1.5.3 Poor agro-meteorological conditions

Poor precipitation conditions in May and June 2015 in large parts of the three northern regions delayed the onset of the 2015 agricultural season by nearly 2 months with most farmers only able to commence the planting of crops in the third week of June instead of early May. The poor moisture conditions negatively impacted agricultural and pastoral activities for the season and ultimately contributed to poor crop yield[13].

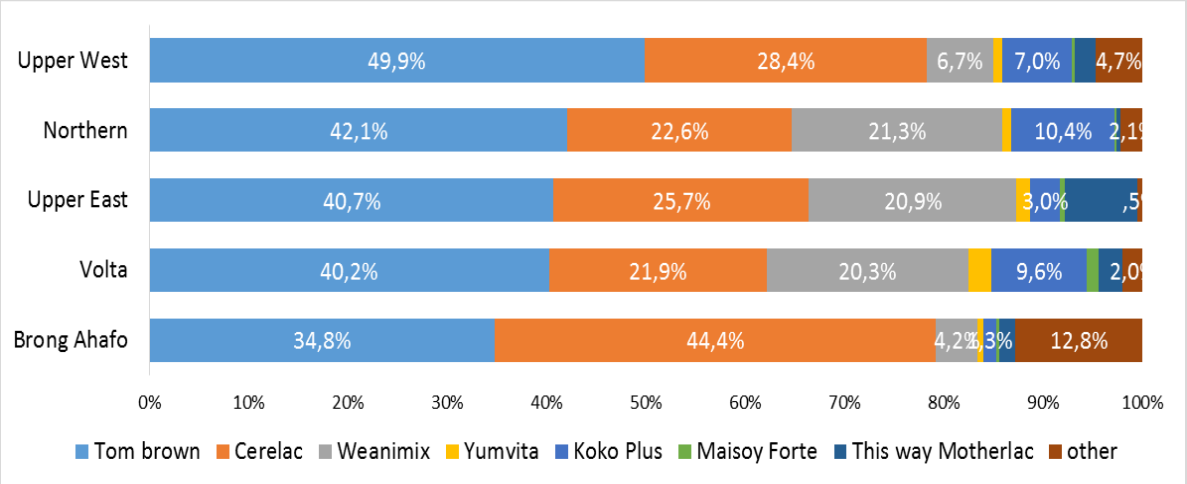
4.2. Knowledge of fortified foods

Some 57.6 percent of households have knowledge about fortified food products for young children. Households' knowledge about fortified food products is highest in the Brong Ahafo Region (79 percent) and lowest in the Northern (52.7 percent) and Volta Regions (53.6 percent). However, only 26.3 percent of the households actually buy fortified food products for young children. Of these, 41 percent are in the Brong Ahafo Region, while the Upper East, Northern Region, and Volta Regions have 34.3 percent, 25.8 percent and 23.1 percent respectively. The Upper West Region has the lowest proportion of households which buys fortified foods for young children. The proportion of male and female-headed households which buy fortified products is 26.1 percent and 28 percent respectively.

The type of fortified food products available in the market include Tom brown, Weanimix, Cerelac, yumvita, Kokoplus and Maisoy Forte. In general, 41.7 percent of households purchase Tom Brown, compared to 26.6 percent for Cerelac and 17 percent for Weanimix. The least utilized product is Maisoy Forte while the top three products often purchased by households are Tom brown, Cerelac and Weanimix.

Tom Brown is the most popular fortified food product purchased in all the regions with exception of Brong Ahafo where preference is given to Cerelac (***Figure 12***). Cerelac is the second most utilized product in all the regions with the exception of Upper East where Weanimix is most preferred. It is also important to note that 10.4 percent of households in the Northern Region and 9.6 percent in the Volta Region purchased Koko Plus. The least utilized product is Maisoy Forte.

Figure 12 Household's purchase of fortified foods by region



Source: EFSA, 2016

Among the livelihood groups, 44.8 percent of fishing households purchased fortified foods for children, compared to 39.3 percent for households with regular employment and 35.2 of traders. In relation to food security groups, slightly more than half of food insecure households purchase Tom Brown,

[13] *NOAA's Africa Climate Hazard outlook for 9th to 15 July 2015*

compared to 13.5 percent of food secure households and 40.4 percent of marginally food secure households. By contrast, 26.9 percent of food secure households purchased Cerelac compared to 18.9 percent of marginally food secure household and 13.3 percent of food insecure households. Food insecure households therefore have greater preference for Tom Brown and other less expensive products such as Weanimix.

4.3. Market assessment

4.3.1 Price trends

During the past few years, the Ghana Cedi has undergone rapid depreciation against the major currents such as the US Dollar and British pound. While it depreciated by 31 percent in 2014, it fluctuated against these major currencies in 2015 and 2016. The cedi's depreciation has given rise to a rapid increase in the cost of various goods such as imported rice, poultry products, cooking oil, sugar and pharmaceutical products. The rapid increase in the prices of food commodities along with increased cost of transportation have contributed to the erosion of the purchasing power of households. The following sections reviews the prices of major staple food items.

a) Maize

The wholesale price of maize has been increasing in all majors markets in the country since January 2014. The price of this staple is currently 85 percent above the five-year average in Accra, 124 percent in Ejura and 153.3 percent above the five-year average in Wa. As compared to May 2015, increases of 34 percent, 63 percent, 130 and 124 percent were recorded in Accra, Koforidua, Techiman and Wa respectively. Further price increases are likely during the lean season of due to low harvested stocks from the major harvest in November/December 2015.

b) Local rice

The wholesale price of local rice has been characterized by a sustained increase in all major markets since January 2015. In Techiman, the price of this staple is up by 171 percent, increasing from 85 GHS in January 2015 to 230 GHS in May 2016. While there has been relative stability in prices in some markets such as Accra, Bolgatanga and Cape Coast, the major market of Ejura recorded the largest increase of 200 percent.

c) Cassava

The trend in the price of cassava is reflective of the impact of a poor harvest of the crop as prices have increased drastically since the beginning of 2016. Between January and May 2016, the price of cassava increased by a range of 128 to 172 percent in Accra, Kumasi, Obuasi and Tamale, significantly constraining access to the staple.

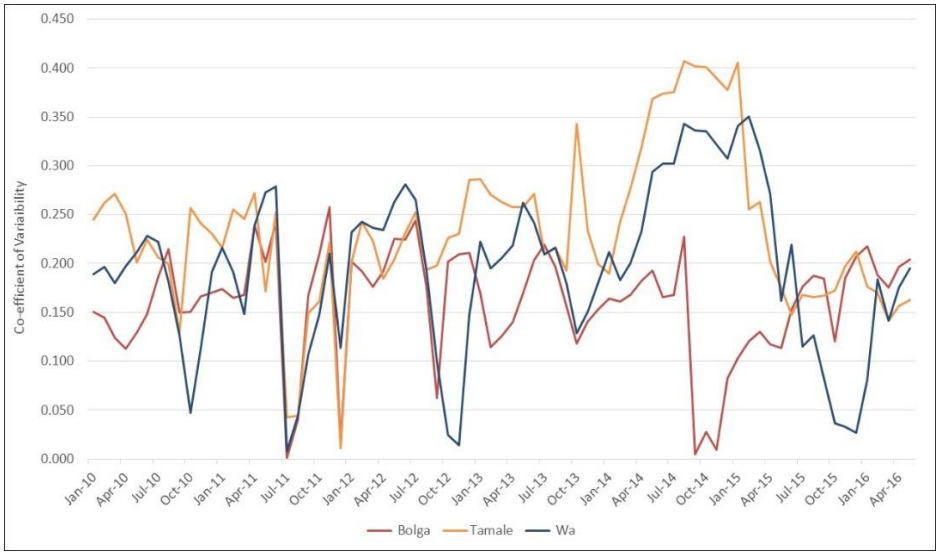
d) Imported rice

The wholesale price of imported rice also an increased in some markets, ranging from 20 percent in Accra and Tema to 50 percent in Tamale, which is largely a reflection of the depreciation in the value of the cedi and rising cost of imports.

4.3.2 Price volatility

Volatility in the price of maize in the three northern markets represent a significant shock which drastically reduces the capacity of households to acquire food as prices continue to rise (***Figure 13***). Since November 2015, the Co-efficient of Variability (COV) for maize price has increased by 496 percent in Wa while the trend in the COV has been less drastic in other markets. The volatility in the market price of staple food commodities negatively affect poor and food insecure households' ability to meet their food needs as they tend to rely more on the market purchases at very high prices. High market price volatility also implies high uncertainty in market conditions which is underscored by low market supply and availability of staples.

Figure 13 Maize price volatility in northern Ghana



Source: MoFA/SRID

4.3.3 Market integration

a) Maize price integration

Markets for maize are generally well integrated and fluctuations in prices are largely correlated across other markets in the country. This means that price signals are transmitted in other markets and bring about co-movement in prices and food commodities move from areas of low price or surplus production to areas of high prices or deficit production. The most integrated maize markets are Accra, Cape Coast, Koforidua, Secondi-Takoradi and Tema. The most isolated or least integrated market is Wa (***Table 6***).

Table 6 Maize market integration

	Accra	Bolga	Cape Coas	Ejura	Koforidua	Kumasi	Mankessi	Obuasi	Sekondi	Sunyani	Tamale	Techiman	Tema	Wa
Accra	1	0.943511	0.973809	0.920639	0.964231	0.962362	0.952581	0.949364	0.96716	0.954186	0.935566	0.924822	0.97338	0.914538
Bolga		1	0.929317	0.87163	0.926103	0.940689	0.908155	0.908473	0.95159	0.891591	0.955514	0.855133	0.912512	0.849547
Cape Coast			1	0.91452	0.966122	0.95487	0.966438	0.934444	0.950975	0.936495	0.929428	0.895007	0.948151	0.876155
Ejura				1	0.921415	0.846465	0.889738	0.872613	0.871095	0.922808	0.901149	0.952075	0.907495	0.9218
Koforidua					1	0.938954	0.949449	0.939945	0.939124	0.937565	0.935295	0.906342	0.937534	0.902613
Kumasi						1	0.926525	0.948769	0.958341	0.913028	0.927524	0.858511	0.933635	0.848148
Mankessim							1	0.916208	0.939175	0.92472	0.893644	0.872088	0.938284	0.838007
Obuasi								1	0.908867	0.939222	0.895611	0.878929	0.931398	0.871154
Sekondi									1	0.899656	0.932074	0.884238	0.94858	0.870469
Sunyani										1	0.886564	0.924908	0.952434	0.87433
Tamale											1	0.873524	0.888871	0.887784
Techiman												1	0.906474	0.946556
Tema													1	0.882523
Wa														1

Source: MoFA/SRID

b) Cassava price integration

The price for cassava is generally well correlated for markets in the southern part of the country while markets in the northern parts are either isolated or the commodity is not even available. The most integrated markets, based largely on their correlation co-efficient are Accra, Cape Coast, Koforidua, Kumasi and Mankessim. The most isolated or least integrated markets are Suyani, Tamale, Ejura and to a lesser extent, Tema (***Table 7***).

Table 7 Cassava market integration

	Accra	Cape Coast	Ejura	Koforidua	Kumasi	Mankessi	Obuasi	Sekondi	Sunyani	Tamale	Techiman	Tema
Accra	1	0.893267532	0.707497	0.910877	0.958774	0.889532	0.875369	0.84168679	0.612172	0.811942	0.923586	0.83417
Cape Coast		1	0.690559	0.888228	0.890774	0.919271	0.892482	0.92283132	0.601674	0.788322	0.841077	0.907218
Ejura			1	0.657452	0.650184	0.636913	0.711567	0.7003662	0.519238	0.52988	0.57891	0.718412
Koforidua				1	0.939214	0.845102	0.889297	0.85288975	0.687631	0.799118	0.879969	0.867843
Kumasi					1	0.887502	0.859615	0.84103075	0.585293	0.871085	0.934703	0.818761
Mankessim						1	0.816138	0.82673498	0.50091	0.788954	0.894792	0.769773
Obuasi							1	0.92284049	0.716058	0.704392	0.765917	0.910778
Sekondi								1	0.688025	0.740875	0.734158	0.924182
Sunyani									1	0.436699	0.461583	0.773863
Tamale										1	0.83516	0.72916
Techiman											1	0.727859
Tema												1

Source: MoFA/SRID

c) Imported rice integration

Imported rice markets are generally not well integrated and fluctuations in prices are not correlated across the country. Even though Tema is the port of entry for most imported items into the country, prices in that market are not correlated with other markets, including that of Accra. The most integrated markets where prices are highly correlated with others are Accra, Mankessim, Sekondi/Takoradi and Cape Coast markets. On the other, the least correlated markets are Sunyani, Ejura and Obuasi. Poor integration of imported rice markets seems to suggest that not all imported rice comes from the same source. A previous market assessment in 2013[14] found that some imported rice in Sunyani and Sekondi-Takoradi comes from la Côte d'Ivoire (***Table 8***).

Table 8 Imported rice market integration

	Accra	Bolga	Cape Coas	Ejura	Koforidua	Kumasi	Mankessim	Obuasi	Sekondi	Sunyani	Tamale	Techiman	Tema
Accra	1	0.643909	0.867014	0.515495	0.7606726	0.719942	0.884193	0.489499	0.9270595	0.311705	0.832252	0.836304	0.697626
Bolga		1	0.694664	0.574721	0.6906564	0.599373	0.6615634	0.346945	0.7335101	0.093026	0.594707	0.718195	0.605041
Cape Coast			1	0.620132	0.9091522	0.862581	0.9558175	0.670697	0.9115544	0.318003	0.844351	0.76847	0.768645
Ejura				1	0.589047	0.732752	0.5505352	0.527513	0.6055963	-0.12987	0.438204	0.474698	0.503591
Koforidua					1	0.824649	0.8624594	0.729805	0.7812245	0.334492	0.827179	0.682938	0.694992
Kumasi						1	0.7303228	0.797332	0.7868156	0.114384	0.804439	0.516255	0.759424
Mankessim							1	0.515107	0.9130479	0.275066	0.782336	0.857175	0.742761
Obuasi								1	0.5151397	0.44904	0.642147	0.207471	0.412661
Sekondi									1	0.184432	0.774226	0.884012	0.73189
Sunyani										1	0.318203	0.187297	-0.08022
Tamale											1	0.593959	0.74953
Techiman												1	0.589421
Tema													1

Source: MoFA/SRID

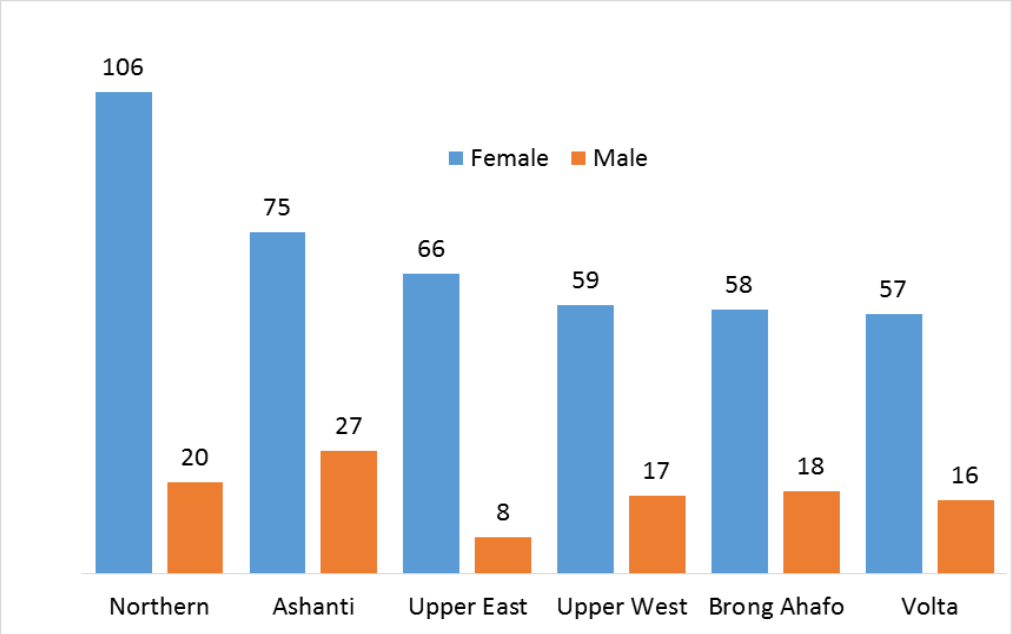
[14] WFP, 2013, Ghana Country Office Market Assessment in Fentantaa, Egyeikrom and Ampain Refugee Camps.

4.3.4 Market structure and conduct

a) General characteristics of traders

Some 61.7 percent of traders had no education while the remainder had at least some primary education. Nearly eighty percent of the traders (79.9) are female while 20.1 percent are male. The Nothern and Ashanti Regions had the largest number of male traders at 20 and 27 respectively (***Figure 14***). Focus group discussions with traders indicate that it is relatively easy to open a business in the six regions of the market assessment.

Figure 14 Traders by Gender by region

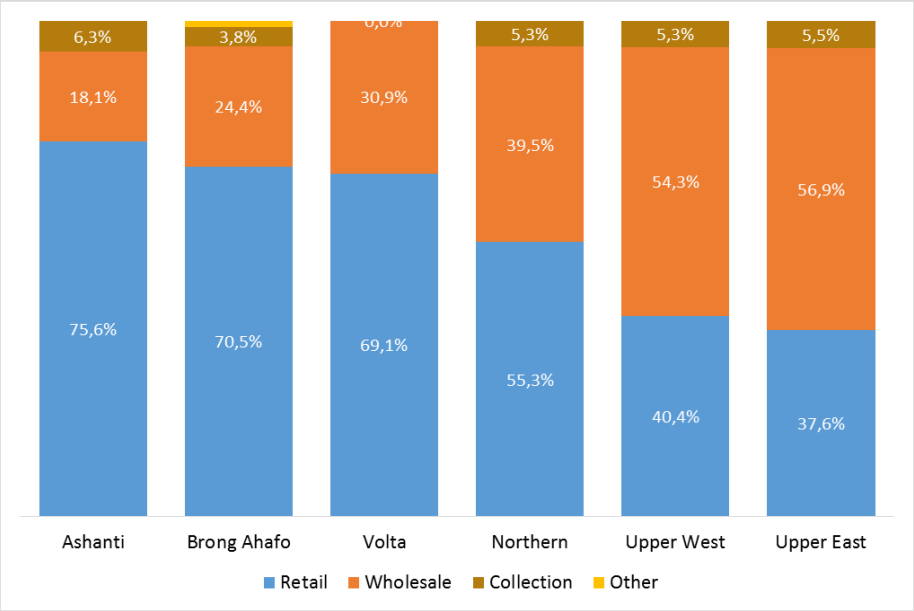


Source: EFSA, 2016

In terms of the type of trading activity, some 58 percent of the traders are retailers, compared to 37.3 percent for wholesale traders and 4.6 percent for collectors. Sixty-one percent of male traders are retailers while 57.3 percent of female traders are also engaged in the same type of trading activity. Wholesale trade is conducted by 31.7 percent of males and 38.6 percent of females. The highest proportion of retailers are in the Ashanti Region while the largest proportion of wholesale traders are in the Upper East Region (***Figure 15***).

The top five products sold by traders are maize (14.2 percent), cowpea (10.8 percent), millet (10.6 percent) sorghum (9.7) and groundnuts (8.7 percent). Some 27.9 percent of collectors sell maize, compared to 18 percent of wholesale traders and 10.9 percent of retailers. Similarly, 18 percent of collectors deal in cowpea, compared to 12.2 percent of wholesale traders and 9.9 percent of retailers. Some 16.4 percent of male traders and 13.6 percent of female traders are involved in the sale of maize.

Figure 15 Type of trading activity by region



Source: EFSA 2016

b) Volumes and flows

Maize is the main local commodity sold by 34 percent of traders compared to 10.2 percent for local rice and 7.8 percent for yam. Some 42.7 percent male traders identified maize as the local product sold while 15.1 percent chose yam. Among female traders, 30.6 percent identified maize as the main local product sold while 7.4 percent pointed to millet. Female traders mostly sell a broad range of local food items than their male counterparts. In the Upper East Region, there are more traders of local rice (25 percent) than those selling maize and millet. In this region, male traders are primarily engaged in the sale of local rice (25 percent), maize (12.5 percent), imported rice (50 percent) and yam (12.5 percent). By contrast, female traders sell a wide range of food items, with the top four items being local rice (15.2 percent), maize (16.7 percent), millet (18.2 percent) and cowpea (10.6 percent). In the Northern Region, 60 percent of male traders sell maize as the main local product while 15 percent pointed to yam. By contrast, 41.5 percent of female traders in the region sell maize while another 17 percent pointed to millet.

About 61.1 percent of traders are of the view that the number of clients purchasing their goods have increased. Some 68.9 percent of male traders have more clients than at the start of the trading activity compared to 59.1 percent of their female counterparts.

However, 61.1 percent of traders who sell local commodities such as cassava, local rice, millet, yam, sorghum and groundnuts sold less than 100kg during the week preceding the assessment while 10.1 percent sold more than 1 metric ton. Even so, 24.9 percent of traders experienced between 10 and 50 percent increase in sales during the week preceding the assessment compared to 15.6 percent who experienced a drop in sales during this same period. Some 23.6 percent of male traders experienced between 10 percent and 50 percent increase in sales compared to 25.2 percent of their female counterparts. By contrast, 16.1 percent of male traders recorded between 10 percent and 50 percent decrease in sales compared to 15.4 percent of their female counterparts.

The increase in sales was attributed primarily to increased local demand for staple food commodities. In the same way, traders who experienced a decrease in the volume of sales attributed this to less

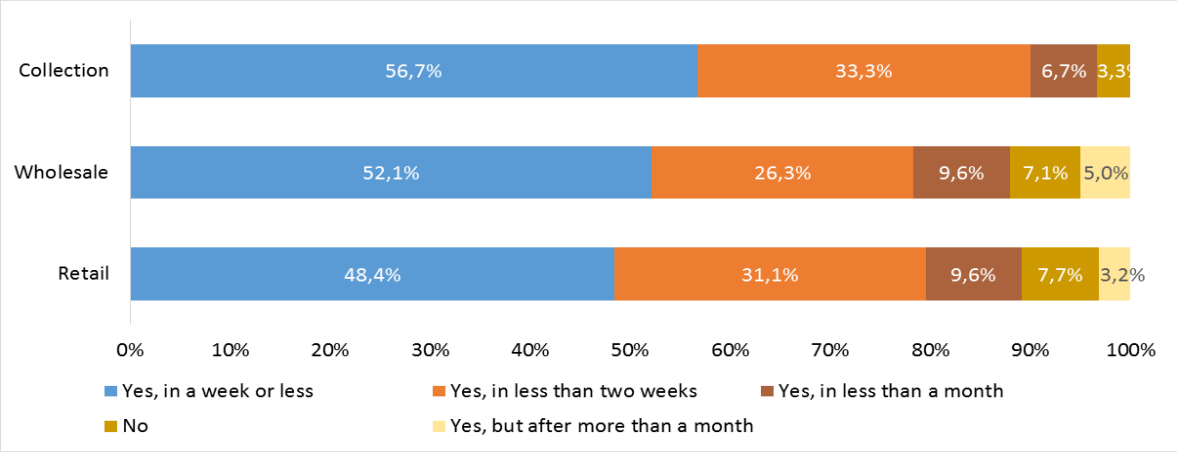
consumer demand within the district. As a result of increases in the cost of transportation and production pattern, 20.7 percent of traders have changed their supply sources. The proportion of male and female traders who have changed their supply sources since the start of the trading activity is 14.2 percent and 22.3 percent respectively. Among retail and wholesale traders, 23.8 percent and 19.5 percent respectively have changed their supply sources.

In the case of imported products, imported rice is main food commodity sold, with 12.5 percent of traders selling this commodity. Some 17.6 percent of traders recorded between 10 and 50 percent increase in the sale of imported goods during the week prior to the assessment mainly due to increased consumer demand. Some 22.6 percent of male traders and 16.4 percent female traders of imported products experienced sales increase of between 10 percent and 50 percent during the week preceding the assessment. By contrast, 7.5 percent of male traders and 10.7 percent of female traders experienced between 10 percent and 50 percent decrease in sales during the same period. Some 34.8 percent of traders expect further increase in demand during the next 6 months.

c) Storage and response capacity

In the event of a substantial increase in demand, 49.3 percent of traders have the capacity to increase supply to meet this demand in a week or less while 28.5 percent have the capacity to meet the increased demand in less than 2 weeks. In each of the Northern, Upper East, Upper West and Brong Ahafo Regions, more than 50 percent of traders have the capacity to respond to increased demand in a week or less. In the Volta and Ashanti Regions, the proportion of traders who are able to increase their stock in response to increased demand in a week or less is 30.1 percent and 41.2 percent respectively. Some 50.9 of male traders have the capacity to respond in a week or less compared to 48.9 percent of female traders. ***Figure 16*** is the response capacity by type of trader. While 56.7 percent of collectors and 52.1 percent of wholesale traders have the capacity to respond to an increase in demand for commodities within a week, 48.4 percent of retailers have that capacity. In the Ashanti Region, over 70 percent of traders reported improvement in storage conditions over the previous year while all traders in the Northern and Volta Regions indicated no change over the previous year.

Figure 16 Traders' capacity to respond to increased demand for food commodities



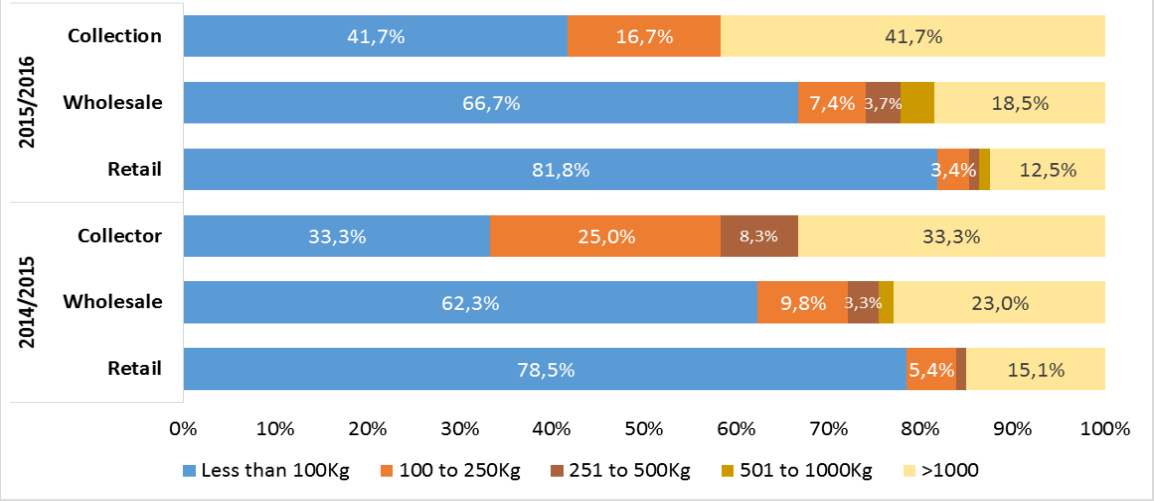
Source: EFSA 2016

The stock management strategy of some traders entails purchasing and storing grains at harvest which is then sold later when stocks are low. Some 55.3 percent of male traders stored food commodities from the previous agricultural season compared to 56.8 percent of their female counterparts. About 64.4 percent of wholesale traders and all collectors stored food commodities from the previous agricultural season compared to 51.1 percent of retailers. Most traders in the Northern, Upper East

and Volta Regions indulged in this practice after the harvest for the past two growing seasons. Among traders who stored food commodities after the harvest in order to sell at high prices in 2014/2015, 71 percent stored less than 100kg compared to 20.3 percent who put more than 1 metric tons in storage.

After the 2014/2015 agricultural campaign, 33.3 percent of collectors kept more than 1 metric tons of food commodities in storage, compared to 23 percent for wholesale traders and 14 percent for retailers. Similarly, 41.7 percent of collectors, 18.5 percent of wholesale traders and 12.5 percent of retailers put more than 1 metric tons of commodities in storage after the 2015/2016 agricultural season (***Figure 17***).

Figure 17 Product storage by traders after the 2014 and 2015 agricultural seasons



Source: EFSA, 2016

Among traders who stored food commodities after the 2014/2015 agricultural campaign, 76.1 percent stored it for 4 to 6 months which is similar to food storage period for the 2015/2016 season. Some 39.1 percent of traders stored goods at stores in the markets while 23.9 stored goods in a shop at home. Nearly forty percent of retailers, 32.5 percent of wholesale traders and 40 percent of collectors kept their goods at a store in the market. Whereas male traders (63.2 percent) put their goods in storage at the market, female traders had more diverse storage systems, with 33 percent storing their goods in the market compared to 28.5 percent who kept their goods in a store at home.

Most traders have very low capacity with 14 percent have a storage capacity of more 1 metric ton. In the Northern Region, 26.8 percent of traders have storage capacity of more than 1 metric, compared to 12.5 percent for Upper East and 6.3 percent for Upper West. Most traders (58.3 percent) in the Ashanti Region have a storage capacity of 100 to 250kg while in the Brong Ahafo and Volta Regions, a most traders have very limited storage space (less than 100kg).

About 28.3 percent of traders have employed others to assist in their business. Of this proportion, 10 percent employed at least one person while 74.5 percent employed between 2 and 5 people. Some 31.9 percent of traders had between 1 and 10 clients while 30.6 percent had between 21 and 50 clients during the week preceding the assessment, with the majority of these clients being female.

d) Credit and financial services

All types of traders across the six regions purchase food commodities on credit basis. Stock purchase on credit by male traders is slightly lower than that of their female counterparts (58.2 as against 62 percent). Most traders in the Upper East and Upper West (55.4 and 57.9 percent respectively) do not

purchase goods on credit, a situation that could be an indication of lack of access to such facilities. By contrast, up to 60 percent of traders in the Brong Ahafo, Volta and Ashanti Regions purchase their goods on credit. Among those who receive goods on credit, 76.7 percent do not have to pay any interest while 15.1 percent are charged an interest of between 1 and 9 percent.

Some 75.3 percent of traders self-finance their trade, compared to 7.2 percent who rely on banks. The proportion of self-financed traders is similar for both male and female (79.2 percent for male and 74.3 percent for female). Some 59.2 percent of traders have banks account with 78.3 percent of male traders having access to bank accounts compared to 54.4 percent for their female counter parts. Among traders with access to bank accounts, 45.8 percent are with the Ghana Commercial Bank while 35.3 are with the Group Ndoum (GN) Bank. Since access to and use of banking facilities sometimes determine the ability of the customer to access a loan facility, it is likely that male traders have a greater potential to access credit facilities from banks than their female counterparts.

In order to increase sales, traders typically advanced credit to their customers. Whereas 65.7 percent of traders advanced credit to their customers in January 2015, the proportion of traders who provided credit to their customers in January 2016 was 59.2 percent. In the Upper West Region, less than half of traders advanced credit to customers in January 2015. Of those who advanced credit to their customers, 43.6 percent of traders gave between 21 and 50 percent of the purchase as credit during this period. By contrast, 54.3 percent of traders gave between 21 and 50 percent of the purchase as credit in January 2016.

e) Constraints

Traders in the six regions are confronted with a number of constraints which either limit their capacity to expand or reduces the profitability of their trade. Some 49.3 percent of traders are affected by lack of capital while low market demand affects 9.9 percent. Some 42.5 percent of male traders and 51.1 percent of their female counterparts are affected by lack of capital while low market demand affects 6.6 percent of males and 10.7 percent of female traders. Other constraints include lack of storage space, irregular supply of commodities and high cost of credit facilities. Among all categories of traders, over 50 percent each identified lack of capital as having the biggest impact on their business.

Most traders experience stock-outs during the rainy season (50.9 percent of traders) which is a period when access to some markets becomes constrained due to a deterioration in road conditions. The period of stock-outs also reflect seasonal changes in the market supply of food commodities. In order to cope with price increases and supply problems, most traders in the Northern and Upper East Regions have developed unusual strategies such as purchasing and storing large quantities at harvest and use of multiple sources of supply.

f) Empowerment

Most traders are primarily responsible for deciding on which commodity to sell, at what price and from whom to purchase for sale. When it comes to deciding on what product is to be sold, 51.6 percent of traders attribute that decision to themselves. The highest proportion of traders who make such decisions is in the Upper East Region (85.1 percent) while the lowest proportion is in the Ashanti Region. In terms of deciding on what price to sell a commodity, 49.9 percent of traders make their own decisions. Some 53.1 percent of traders make their own decisions regarding from whom or where to purchase a product with the highest proportion in the Upper East Region and the lowest in the Ashanti Region (7.8 percent).

Some 37.7 percent of male traders make their own decisions regarding which product to sell compared to 55.1 percent of female traders. In terms of what price to sell, another 37.7 percent of male traders make their own decisions compared to 53 percent of female traders. With regards to where or from whom to purchase a product, 39.6 percent of male traders make their own decisions compared to 53.1 percent of female traders. Some 53.8 percent of female traders are very comfortable speaking up in public compared to 43 percent of their female counterparts.

5. Conclusions and recommendations

Food security conditions in the five regions of the assessment have been hampered by the combined impact of hash macroeconomic conditions and a declining staple crop harvest during the past few years. The prevalence of food insecurity remains high in Central Gonja, Talensi-Nabdam and Wa West Districts which were found to have high food insecurity during the in 2012 CFSVA and is expected to worsen during lean season's months of May to August.

Households in the Upper East and Upper West Regions are using more frequent and severe coping strategies relative to the others and are therefore more vulnerable to food insecurity. These households are also using stress and asset depleting strategies and are vulnerable to future shocks as their resources have reduced. They have a reduced ability to purchase inputs for farming and to meet essential food and health expenditure. In Tamale Municipality, Lawra and Krachi East Districts which each have about 60 percent of households with marginal food security, the situation could also deteriorate significantly as these households could transition into moderate and severe food insecurity as a result of shocks and seasonal changes in access to food during the lean season.

Due to the low consumption of Vitamin A rich foods, the risk of micronutrients deficiency is very high in all the five regions. This situation is particularly serious in the Upper East Region where more than fifty percent of households either did not consumer this type of food or only consumed it a few times during the week preceding the assessment. As the consumption of iron-rich foods is equally low in most regions, severely food insecure households are not only at heightened risk of under nutrition and micro-nutrients deficiency, but also iron deficiency anaemia.

Although knowledge about fortified food products for young children is high, a relatively low proportion of households (26.3 percent) actually purchase those products, with Tom Brown, Cerelac and Weanimix as the top three most popular fortified foods for children. Due to cost considerations, food insecure households have greater preference for Tom Brown and other less expensive products such as weanimix.

While food insecurity among female headed households is high relative to their male counterparts, a high proportion of female traders are affected by lack of capital, with a lower proportion of female traders having access to bank accounts and are more involved in the purchase of goods on credit. These conditions inherently affect the profitability of their businesses and the ability to expand and ultimately reinforces food insecurity among females, particularly in households where they are the head.

The maize and other staple food markets are to a greater extent integrated across the country and price signals are transmitted in other markets and brings about co-movement in prices. Nearly fifty (50) percent of traders have the capacity to increase supply within one week in the event of an increase in demand, but the proportion of traders with large storage capacity (>1 metric ton) is generally low across the assessed markets. This notwithstanding, a combination of the above indicators suggest that market conditions are to a large extent favorable for CBT interventions.

Considering the current situation, the following recommendations are being proposed:

- Prioritize the most food insecure districts for assistance through the implementation of nutrition-sensitive intervention to reduce the level of malnutrition;
- Expand and strengthen partnerships to implement more resilience-building/asset creation programs in the most food insecure regions and districts;

- Strengthen and expand safety net programs such as the Take Home Ration for girls to include some of the most food insecure districts;
- Use the upcoming Enhanced Nutrition and Value Chains (ENVAC) to target the most food insecure districts in the Upper East and Upper West Regions and to support smallholder farmers (particularly female-headed households) to increase local production of nutritious staple food towards reducing stunting;
- Increase advocacy with Government of Ghana and other relevant partners to mitigate the vulnerability of smallholder farmers to adverse weather conditions through the implementation of crop insurance schemes;
- In order to improve smallholder farmers' access to inputs such as fertilizer, WFP could consider developing partnerships with GOG through the Ministry of Food and Agriculture to partially pay the beneficiaries of asset creation in the form of fertilizer;
- Due to the volatile nature of staple food prices, it is recommended that a market monitoring system should be expanded to cover all the areas where CTB is being implemented in order to allow for a regular review of the transfer value to beneficiaries; and
- Considering the decreasing agricultural yields over the years, WFP and MoFA should consider reviving the northern Ghana food security monitoring system.