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THE SMALLHOLDER FARMER IN GHANA'S FOOD SYSTEMS



JOSEPH A. YARO, JOSEPH K. TEYE, CHARLES K. NYAABA
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EXECUTIVE SUMMARY

This research examines the food systems in Ghana with a view of identifying policy interventions that can lead to increased opportunities for smallholder farmers, drive sustainable production and create opportunities for livelihood diversification. The research was commissioned by the Peasant Farmers Association of Ghana with funding from Open Society Foundation (OSF), through Open Society Initiative in West Africa (OSIWA), an organization that works to improve food security and smallholder agricultural governance in West Africa. The report was based on an analysis of relevant policy documents and primary data collected through in-depth interviews with various stakeholders, focus group discussions and surveys (questionnaire) among 400 farmers and 400 consumers selected from four ecological zones of Ghana.

The assessment reveals that, while the government of Ghana has implemented a number of policies in the agriculture sector, most of these policies tend to favour large scale farmers producing for export or small-scale farmers producing cash crops. Recent agricultural policies have recognized the need to support smallholder farmers producing food crops, but there is a stronger focus on the production segment of the food system, with little emphasis on enhancing small-holder farmers' access to the market. The non-prioritization of marketing and the over-emphasis on production shows that the government is preoccupied with an older productivist discourse. Productivist discourse often require technical fixes, rather than seeing the constraints of marketing which in a market economy constitutes the main driver of growth of the sector. The study argues that the recent emphasis on large scale farming, the call for increasing use of biotechnology, naïve liberalization, and the heavy application of external chemical inputs, may be misguided dimensions of Ghana's agricultural policies that require a critical informed debate.

The food system in Ghana comprises of activities from food production, through to consumption and back to farmers planning for production. The bulk of food in Ghana is produced by smallholder farmers located across the different ecological zones that offer the food variety the country enjoys. There are few large farms and increasingly many medium size holdings due to rising incentives from urban markets which has led to land concentration. Ghana's food system has moved from its simplistic beginnings into complex ones with circuits linking global systems. These are mainly due to global interconnectedness, urbanisation, technologies, and population dynamics. The need for more efficient and sustainable food systems that satisfies both local demands as well as national and global context has become ever more important.

Despite receiving little support from the state, smallholder farmers produce a variety of food for their own consumption and for sale into local and regional markets, thereby enhancing their livelihoods, food security and foreign exchange of the country. While ecological conditions determine the range of crops that can be produced in each zone, marketability is the most important determinant of the crops produced by farmers in each region. The implication of this finding is that current government programmes that focus mainly on supplying inputs to farmers without limited implementation of the marketing components of policies and programs, are bound to fail. A significant proportion of farmers combine farming with other income generating activities, such as rearing of livestock, trading and casual labour. Efforts to help farmers diversify income sources can leverage on these existing alternative income generating activities.

The challenges facing smallholder farmers include lack of access to credit and insurance; low access and poor quality inputs; high cost of land; high cost and poor access to farm mechanisation; inadequate extension services; pest and disease infection; post-harvest loses; marketing; poor storage facilities, and high transportation cost. We therefore argue that the livelihoods of smallholder farmers can be substantially

improved if the government and the private sector work together to support them by improving the viability of markets, removing market imperfections, improving rural infrastructure and supporting non-farm activities.

The drivers of marketing and food distribution are market agents (market queens, itinerant traders, retailers and transport operators). They play a dual role in supporting farmers with production resources and at the same time play a leading role in food marketing and distribution. Whiles some marketing agents claimed farmers are unreliable, the farmers on the other hand perceived market agents as exploitative. According to the farmers, market agents overweigh their produce, offer low prices and on some occasions, failed to pay for products purchased from farmers on credit. Whiles the role of market agents is crucial in food distribution and marketing, they are constrained by poor road infrastructure, inappropriate transport facilities, extortion and harassment by the police on the highways, and high levels of perishability. The distribution sector has the highest potential for providing jobs, generating value addition and higher incomes, thereby ensuring poverty reduction. An effective food distribution network propels rural development through multipliers running through processing, packing, advertising, transportation and storage.

The consumption of food is the main determinant and driver of the food system by influencing production decisions and processes throughout the system. The pattern of food consumption in Ghana changes in response to demographic shifts, economic prosperity, globalization, urbanisation, environmental change and migration. The consumption of food in Ghana is socio-culturally differentiated and ecologically defined. Eating local is an important characteristic of food consumption landscape as cultural affinities define local food dishes in the regions. The source of food for most Ghanaians is therefore their own regions followed by those from other regions and finally from imports. Imported food include dairy and meat products, rice and processed foods of global appeal. Rice is fast becoming a main dish in Ghana. Though imports may constitute a small percentage of food consumed per household, it is nonetheless growing in importance and putting a strain on the country's food import bills. Meeting stiff competition from globally produced foods will require processing, packaging and most importantly good quality. We argue that as the population of Ghana increases in number and quality in terms of education and changing attitudes, the diets and attitudes of these Ghanaians have changed towards traditional and new dietary formulas from other regions and countries.

The main drivers of the food systems include physical, economic, social, and cultural forces emanating from local, regional and global levels. Generally, rapid economic and income growth, urbanization, and globalization are leading to dramatic changes in demand patterns and diets. Also, global environmental change, technology and infrastructural changes are defining the food supply systems in response to these changing demand patterns. However, these forces radiate through the prism of political decision-making via the policies conceived and implemented. Policy biases continue to misdirect scarce resources thereby leaving the conditions of smallholders unchanged. Access to resources and inputs are limited for the very poorest especially women and the youth. Production pressure has altered the altruistic traditional land tenure systems into commercialised ones with access based on ability to pay. While the smallholders navigate all these challenges, they are limited from any reasonable social mobility due mainly to poor marketing conditions, exploitative market relations and increasing competition from imported foods. Dealing with agricultural market relations should be a major policy objective with well-thought out interventions.

The changing trends and processes create enormous opportunities which when well harnessed can further the socio-economic prosperity of the farm and non-farm sectors. There is the need for new forms of investments in the agricultural sector which moves beyond just production to warehousing, processing, and standardization and distribution systems. These are grey areas that require both local and foreign private sector actors. The youth who may not be interested in direct agricultural production have several opportunities in the agricultural value chains to invest in and make better living that provides synergies to agricultural production and meets the food and nutritional requirements of the Ghanaian population.

The way forward

*The future of agriculture in Ghana will certainly have the smallholder as a major player. The role of policy in directing and facilitating investments in production and post-harvest activities is critical in sustaining the activities of smallholders. The limited and stagnant growth in productivity and the inability to adopt modern technology is directly the result of the inability to absorb the production of farmers. Taming the market and assisting in regulating the relations between farmers, traders, processors, exporters, input dealers and support services should become core to agricultural policy. The focus of the productivist model should shift to a recognition of farmers own production knowledge systems that are more appropriate in meeting current environmental and socio-cultural challenges. There is the need to disseminate modern scientific methods to be incorporated into existing efficient farm arrangements. A class analysis and response to different farmer needs is critical as it enables the right targeting of poor women, poor small farmers, better-off smallholders, and the youth who are new actors required for the sustainability of farming in Ghana. Ghana's agricultural policy needs to **navigate carefully the neoliberal global trade regimes**. Smart government policies need to necessarily incorporate aspects that reduces the threats of international trade and its rules and regulations on Ghana's agriculture. Aligning our domestic policies to enable further exploitation must be stopped. We need to align with international capitalism in a manner that allows us derive benefits, take advantage of opportunities, and reduce the threats from predatory global actors. Increasing regional trade and removing problems such as customs, immigration and above all police harassment should be tackled head-on without compromise.*

*A focus on marketing, food safety and environmental degradation is urgent. A **holistic approach** is needed which recognises the need to protect the environment and ensure sustainability of production; food safety through the appropriate use of pesticides, herbicides, storage media and food handling; and incorporate activities of processing and marketing. **Building farmer capacities to deal with quality and food safety** should be supported by the state, NGOs, the Donor community and farmer-based organisations. The training of farmers on quality and standards to improve on the quality of their products is a necessity if local agriculture is to survive the global competition and take advantage of the growing opportunities.*

*Domestic processing of agricultural produce and encouraging the consumption of refined Ghanaian products is the main way out of the market rigidities, seasonality of supply and postharvest losses. The government's one district one factory policy on **industrialisation should be focused on agro-based industries**. The needed policies to grow such an industry needs to span energy, taxation, transport, and technology transfer. A careful plan is needed to balance local and foreign investments in this sector. The government **Planting for Food and Jobs program needs a careful review** that incorporates the voice of the farmers so as to design regional packages that fit the needs and concerns of specific groups of farmers. The program should refocus on dealing with distributional challenges that negate the gains made from investments in production.*

The need to support locally adapted simple technologies throughout the food system should be prioritized for reasons of effectiveness, cost, availability and technical know-how.

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CHAPTER 1: INTRODUCTION

1.1 Introduction

This research examines the political economy of food systems in Ghana, as part of a project which aims at exploring how agricultural policies and investments should be reformed to benefit smallholders and put their interests at the heart of government policy. The research agenda resonates with the global search for an ideal food system that is capable of providing enough quality food to meet the demands of a projected population of about 9.8 billion by 2050 (United Nations, 2017). The global effort to enhance food security is manifested in the inclusion of food security issues in the sustainable development goals (SDGs) (OECD-FAO, 2016)

There is no doubt that recent global development programmes aimed at enhancing agricultural production have been directed towards Africa, where about 60 percent of the population live in rural areas and depend largely on agriculture for their livelihoods (FAO, 2017). About 80 percent of farmers in Africa are smallholder farmers, producing food for their households, the domestic markets and for the regional markets (Schaffnit-Chatterjee, 2014). Despite the merits that comes with smallholder farming, SSA farmers are constrained by limited capital, problems with land tenure systems, difficulty accessing credit facilities, markets access, poor agricultural extension services and above all, government agricultural policies that favour investment in large scale farming (AGRA, 2016).

In recognizing the role of the agricultural sector on economic development on the continent, African leaders met in Maputo in 2009 and agreed to commit themselves to increase annual public investment to at least 10% in the agricultural sector under the Comprehensive Africa Agricultural Development Programme (CAADP). The associated investments were expected to trigger agricultural growth by at least 7% and contribute to structural transformation of agro-industries to provide jobs for the growing population. As a way of enhancing the outcomes of CAADP, the Heads of States of AU met in Equatorial Guinea, on June 2014, and adopted “the Malabo declaration” which recommits leaders to double their current agricultural investment by 2025 (Africa Union, 2014).

At the sub-regional level, the Member States of the Economic Community of West African States adopted the ECOWAS Agricultural Policy (ECOWAP) under the regional CAADP Compact.

ECOWAP envisaged a modern and sustainable agriculture, based on the effectiveness and efficiency of family farms and the promotion of private sector for productive and competitive intra-community and international markets. ECOWAP is implemented through a Regional Agricultural Investment Program (RAIP), which prioritizes the development of value chains, peri-urban agriculture and promotion of national, regional and international trade (AGRA, 2016).

As in other African countries, food production is a topical issue in Ghana; where agriculture is a major economic activity, contributing about 20.1% to Gross Domestic Product (GDP) and employing about 44.60% of the population (MoFEP, 2017). The sector is dominated by smallholder farmers of about 90% who produce more than 80% of the food for domestic consumption, industry and export. With Ghana's population expected to reach 30.5 million by 2020 and growing at the rate of 2.36%, the role of agriculture in providing food, incomes and jobs for the population is crucial. However, there are several challenges limiting performance of the sector. Challenges ranging from climate change, land tenure issues, limited access to extension services, high cost of agro-inputs, poor transportation and road infrastructure, high postharvest losses, difficult access to credit facilities and above all, government's agricultural and trade policies that is of disadvantage to Ghanaian smallholder farmers.

As a way of addressing these challenges, the government of Ghana has in the past (and continues to) introduce(d) some policies and interventions aimed at ensuring agricultural transformation. The country's medium term overall national development policy, the Ghana Shared Growth and Development Agenda II (GSGDA-II; 2014-2017) for instance, underscores the importance of improving the productivity of crops and livestock; accelerating job creation; and enhancing the competitiveness of the sector to ensure its integration into the domestic and international markets. The framing of the Food and Agriculture Sector Development Policy (FASDEP) in 2007 was also to provide a policy guide for this transformational agenda. The Medium Term Agricultural Sector Investment Plan (METASIP) I, II & III detailed resource allocation to ensure the success of FASDEP and also, improve public investment in the sector. Under METASIP III (2017-2021), the Ministry of Food and Agriculture launched a flagship programme "Planting for Food and Jobs" (PFJ) in 2017. The PFJ, which forms part of the government's main agricultural programme for 2017 to 2020, focuses on increasing food production, providing raw material for industry and creating jobs (MoFA 2017).

Although smallholder farmers produce over 80% of food in Ghana, successive programmes aimed at transforming the agricultural sector tend to focus on cash crops and large scale industrial agriculture. While there have been calls for a change in the ideological support for industrial agriculture towards agro-ecological and sustainable small-scale agriculture, policies and their strategies have not reflected this. There is also poor understanding of the implication of government food production policies on the future of smallholder farmers.

It is against this background that this research examines the political economy of food production, distribution and consumption in Ghana. The research emphasizes the concept of food systems over agriculture as it takes account of all aspects of the political economy of the production, distribution, consumption and trade in food.

The research was commissioned by the Peasant Farmers Association of Ghana with funding from Open Society Foundation (OSF) through Open Society Initiative in West Africa (OSIWA), an organization that works to improve food security and smallholder agricultural governance in West Africa. The Peasant Farmers Association of Ghana (PFAG), on the other hand works towards improving the living condition of smallholder farmers in Ghana.

The study explores the main constraints to smallholder farming and opportunities for enhancing food production, distribution and consumption in Ghana. Our findings challenge the dominant current narrative that prioritizes large scale commercial agriculture and concentrates mostly on production to the neglect of other equally important components of the food system. We have demonstrated that despite receiving little support from government, smallholder farmers produce a variety of food for their own consumption and for sale into local and regional markets, thereby enhancing their livelihoods, food security and foreign exchange of the country. We argue for a pro-smallholder policy architecture that aims at bringing government and the private sector to playing critical roles in improving the food system of Ghana, particularly in increasing productivity, improving marketing and processing, developing transport infrastructure, delivering good quality and acceptable foods to consumers.

1.2 Specific Objectives

Based on the Terms of Reference (TOR), the specific objectives are to:

- Create an overview of the Ghanaian food system with a view to highlighting interventions that might lead to increased opportunities and choice for Smallholder farmers, drive sustainable production and create opportunities for off-farm employment.
- Identify where in the foods system (crops, markets etc.) Open Society Foundation can use limited resources to catalyze maximum change.
- Demonstrate to government and the private sector how coherent policy changes, investment, institution building and research/innovation could lead to positive systemic change.
- Assist organizations representing farmers, rural women and youth to develop an ambitious vision for what change is possible, starting with realistic first steps.

1.2.1 Key Areas Covered:

In line with the above specific objectives, the study is expected to cover the following areas:

- Collation and analysis of existing food systems in Ghana, drawing out clearly how domestic market development from “field to table” could result in the best returns, in contrast (or in addition to) the current approach of producing cash crops for export;
- Identify which crops, markets and related off farm services have the greatest potential for employment and livelihood enhancements;
- Identify the key opportunities and threats facing SHFs in relation to domestic market development, and who is making the decisions in the agricultural space which will give life to either the opportunities or the threats
- Identify the significant economic and political drivers shaping these threats and opportunities. These should range from big picture (e.g. terms of trade) to issues relating to the role of women in rural production and issues of land rights as they affect men and women
- Recommend what interventions the Open Society Foundations and other change agents could make to tilt the balance of power toward more investment in and support for local market development, diversification of food crops and local beneficiation.

1.3 Methodology

1.3.1 Outline of Research Approach

Two main sources of data were relied upon to achieve the research objectives. These were: (a) *documentary analysis of agricultural policies and food systems* and (b) *collection and analysis of primary data*. While the documents analysed included administrative records, annual reports and

formal policy documents, primary data were collected from various stakeholders, including farmers, traders of agricultural products, transporters of food items and consumers in selected communities in Ghana, and interviews with officials of the Ministry of Food and Agriculture. It was the conviction of the research team that, the above activities would provide data for making policy recommendations for transforming small scale farming activities for sustainable development.

1.3.2 Documentary Analysis

In order to identify key issues to be investigated on the ground as well as make recommendations for reforming agricultural policies to benefit smallholders and put their interests at the heart of government policy, this study started with a desk review and comprehensive analysis of the agricultural policies in Ghana. Relying on a prescriptive approach to policy analysis, recent agricultural policies and programmes in Ghana were analysed with a view of identifying strengths and weaknesses. The policy analysis particularly focused on whether recent government's agricultural programmes are serving the needs of smallholder farmers or not. Content analysis of the state policies provided useful information for designing instruments for the data collection. A second part of the documentary analysis focused on the literature on the existing food systems in Ghana. This was based on an analysis of academic and policy publications on the subject matter.

1.3.3 Collection and Analysis of Primary Data

In view of the inherent limitations of dichotomous qualitative and quantitative approaches (Bryman 2001; Teye 2012), a mixed-methods research design was employed for the collection and analysis of primary data. In-depth interviews, focus group discussions and group discussions were used to collect qualitative data, while two structured questionnaires were used to collect quantitative data from farmers and consumers. While the research team was aware of the challenges associated with such a triangulation of methods (e.g. time constraints, high research costs, and conflicting data from different sources, see Castro et al, 2010), mixed-methods design was considered most appropriate in view of the nature of this research.

The quantitative data, which was generated from the survey, was useful for analysing the relationships between background characteristics of consumers and their food preferences and purchasing behaviours. The method was also appropriate for explaining the experiences of different farmers and consumers. On the other hand, although data generated through in-depth

interviews and focus group discussions were not very appropriate for generalizations and establishing relationships between variables (see Plano Clark et al, 2008), they were useful for examining the experiences of different farmers, transportation agents, extension officers and consumers. As a result, quantitative and qualitative methods were combined to compensate for the limitations of individual methods and also to broaden the scope of the study to cover all actors in the food system of Ghana. As a way of maximising the use of time, the different research strategies were employed in line with the concurrent mixed methods design (see Creswell, 2003), whereby different strategies were used concurrently. In the presentation that follows, the details of the study sites and the individual methods of data collection are presented.

1.4 Study Sites

Even though the study covers the entire Ghana, it was not possible to collect data from all regions of Ghana. Consequently, primary data were collected from four regions of Ghana, namely the Greater Accra, Northern, Brong Ahafo and Eastern regions of Ghana. These four regions were purposively selected to represent the main ecological and crops zones of Ghana. The selection of different regions was informed by the assumption that different climatic conditions, geographical location, closeness or otherwise to urban areas comes with different constraints that requires different policy approach. In each of these four regions, farmers, traders, transport operators and consumers were randomly selected and interviewed. In each region, two different farming communities were purposively selected for the focus group discussions, survey, interviews with farmers. A total of 100 farmers were selected for the survey in each region. An important market was also selected for the consumer survey involving 100 persons in each agro-ecological zone. Map 1 and Table 1 show the districts, farming communities, markets and the number of respondents selected in each region.

Table 1: Study communities

Region	District	Farming Community and sample size for farmers survey (n)	Market and sample size for consumer survey
Greater Accra	Ada West	<ul style="list-style-type: none"> • Sege (n=45) • Korluedor (n=55) 	Ashiaman main market (n=100)
Eastern	Fanteakwa	<ul style="list-style-type: none"> • Begoro (n=51) • Bosuso (n=49) 	Koforidua central market (n=100)
Brong Ahafo	Nkoranza	<ul style="list-style-type: none"> • Nankuma (n=38) • Ekuma Dumasa (n=62) 	Techiman Market (n=100)
Northern	Savelugu	<ul style="list-style-type: none"> • Diare (n=71) • Kadia (n=29) 	Tamale market (n=100)
Total		N=400	N=400

The Greater Accra Region represents the coastal savannah zone of Ghana, which is quite dry with mean annual rainfall totalling 800mm (Ofori-Sarpong and Annor, 2001). The coastal savannah zone enjoys double rainfall maxima. The major rainy season begins in April and ends in mid-July which is followed by a dry spell for about one to two months. The minor rainy season peaks in October which is followed by a dry season from December to March. The rainfall distribution is associated with high variability with regards to the onset and cessation, intra and inter-seasonal patterns. Most communities in the coastal savannah zone are into crop production, livestock production and fishing. In this region, Sege and Korluedor both in the Ada West District were selected for assessment of agricultural production by farmers. In both communities, farmers are predominantly vegetables and fruits producers. Other crops grown in these communities include tomatoes, water melon, pepper, maize, and shallots. There are no large markets in these communities but traders go to the farms in the communities to buy agricultural produce. Ashaiman market was selected for the consumer survey in the Greater Accra region.

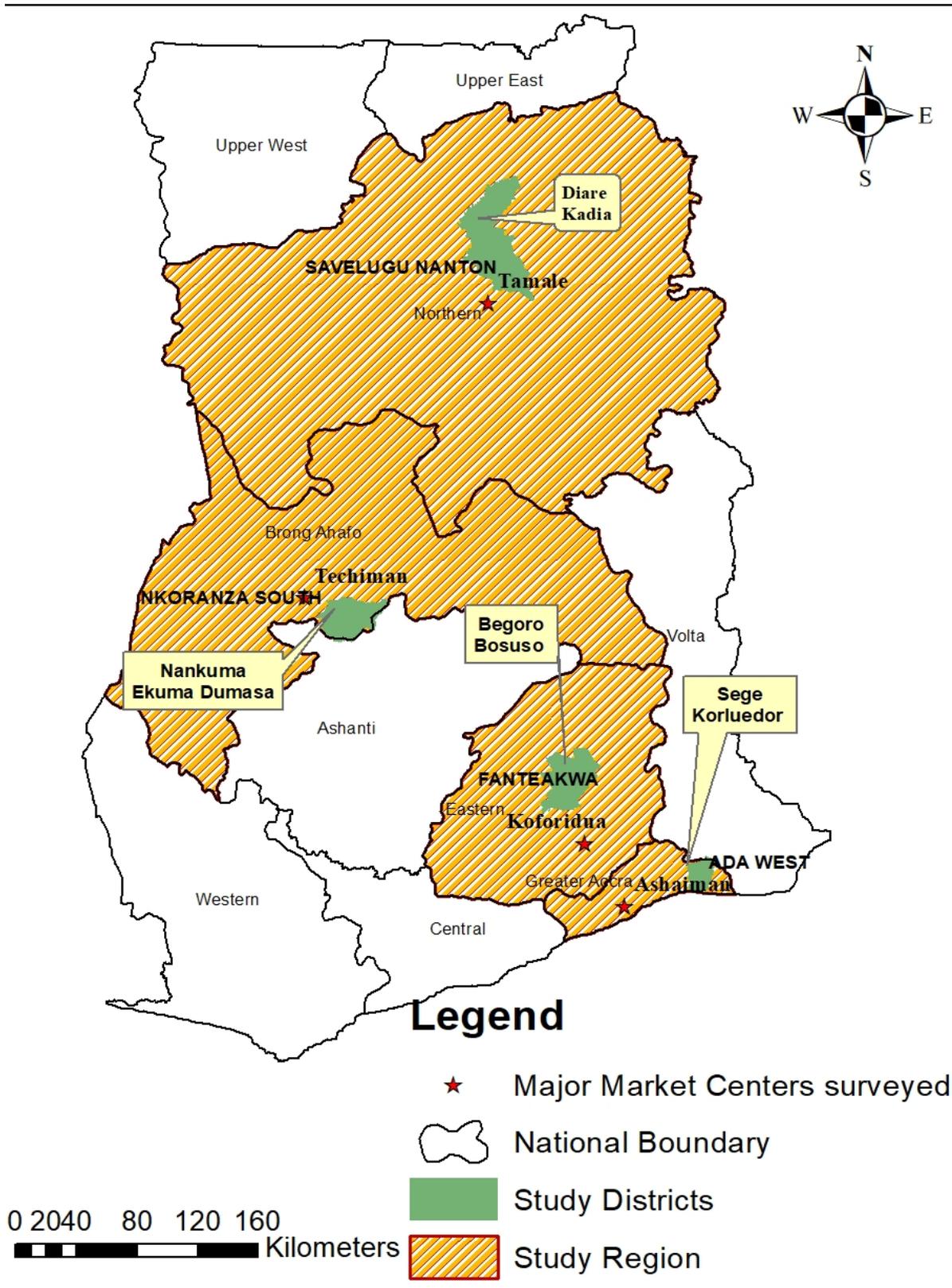
The Eastern region which was selected to represent the forest ecological zone of Ghana receives high amount of rainfall (about 1800mm). There are two distinct rainy seasons in the region (i.e. May-June and August-September). The climate supports the production of a variety of cash and food crops, including cocoa, plantation, vegetables, cereals and cassava among others. The two farming communities selected in this zone for the farmers' survey are Begoro and Bosuso. These

communities which fall within the Fantekwa district have small periodic markets. However, Koforidua market was selected for the consumer study.

Brong Ahafo Region which is touted as the food basket of Ghana was selected to represent the transitional forest zone. The annual rainfall is about 1500 mm in the wetter south and 1300 mm in the northern part of the Brong-Ahafo Region. Majority (90%) of the farmers are smallholders. Some of the crops cultivated are cassava, plantain, yam, water melons and vegetables among others. Cash crops such as cocoa and cashew nut are also produced on large scale. Nankuma and Ekuma Dumasa both in the Nkoranza district were selected for the farmer survey, while Techiman market was selected for the consumer survey.

The Northern Region was also selected to represent the northern savannah ecological zone of Ghana. The northern Savannah agro-ecological zone experiences single maxima rainfall regime (June-July) with an average annual rainfall of 1000mm. This zone does not support large commercial timber stock, but it is still a source of very useful livelihood resources (e.g. herbs, fodder, fuel wood etc.). In this region, the two communities selected were Diary and Kadia which are both located in the Savelugu district. Agriculture is the main economic activity in both communities. The main crops cultivated in these communities include maize, millet, yam, sorghum, rice, groundnuts, Bambara beans, pepper, soy bean and cotton. Both communities have small periodic markets. The consumer survey was conducted at Tamale Central market.

Map 1: Study communities and major markets surveyed



1.5 Qualitative Data Collection Methods

Focus group discussions (FGDs), in-depth interviews and group discussions constituted the main qualitative data collection methods employed in this study. Focus Group Discussions were held with farmers before the in-depth interviews to ensure that important issues were identified for further probing during the interviews. In each selected community, two different focus group discussions were held with different commodity groups of men and women groups. The participants in each focus group were about 8-12 comprising men and women and both young and older farmers. The focus group discussions aimed to provide a natural setting for various categories of farmers to discuss various issues including: history of farming in the community; the crops produced in the community; incentive packages they get from the government and donors; agricultural investments in the area; participation in agricultural policy formulation; markets and related off farm services that can promote employment and livelihood enhancements; opportunities and challenges facing farmers in relation to domestic market development. In line with the assertion of Limb and Dwyer (2001), the Focus Group Discussions helped the researchers to understand the lived experiences, complexities, negotiations, perceptions, conflicts and shared meanings of farmers' everyday social worlds and realities.

The *in-depth interviews*, on the other hand, were used to collect data from different categories of respondents. First, key informant interviews were conducted with two officials from the Ministry of Food and Agriculture in Accra; one official of each of the district assemblies where the study is being conducted, two large food processing companies, two large food distributing agents, two female traders, two transport operators, four extension officers, two supermarkets and hotel operators who import food stuff in order to understand the challenges with local food producers. Representatives of the General Agricultural Workers Union, National Association of Seed Traders and Yara were interviewed to understand their views on policy environment and the additional strategies that will ensure meaningful increased investments in farms belonging to smallholder farmers.. Additionally, five in-depth interviews were conducted with selected farmers in each of the farming communities summing up to a total of 20 interviewees. Eight of the interviewees were females while 12 were males. Of the 20 farmers, 4 were large scale (over 20 acres), then 4 were medium scale (6-19 acres) and the rest were small scale farmers (5 and below acres). Depending on the background of the different interviewees, the interviews covered several issues including farming practices; the current architecture of agricultural investments in Ghana; opportunities and

challenges provided by various agricultural markets; investments that are required to maximize farmers' returns and rural employment; and challenges faced by individual farmers. A flexible interview guide was used to interview different respondents. The flexible guides allowed for an exploration of unanticipated themes. In the local communities, most of the interviews were conducted in the local languages of the respondents, recorded electronically and transcribed.

In addition to the Focus Group Discussions and in-depth interviews which were conducted to collect data at the early stages of the study, *group discussions* was used for validation of the research findings. The group discussions entailed a meeting in Accra attended by farmers organizations, researchers, government officials and private sector organizations and private companies involved in agriculture. Farmers were invited from all the study communities. The meeting provided a platform for presentation and validation of preliminary research findings as well as discussion of measures that could be taken to enhance the livelihoods of farmers.

1.6 Surveys

Two separate surveys were also carried out as part of this research. First, a structured questionnaire was used to collect data from a sample of 400 farmers selected from the four ecological zones described above. As noted already, the structured questionnaire was used to interview 100 farmers in two communities indicated in each of the districts in Table 1. The questionnaire focussed on several issues including crops cultivated, access to farming inputs, support received from government, farming practices; opportunities and challenges provided by various agricultural markets; and challenges faced by individual farmers. A systematic sampling technique was used to select farmers in each community.

In addition to the farmer survey, a consumer survey was also used to collect data from a sample of 400 consumers selected from the four administrative regions listed above. In each of the selected regions, one relatively large market was selected for the study. The questionnaire sought information on consumers' perceptions of the food systems, their food purchasing practices, the challenges they face in accessing selected food items at various seasons of the year and their views on how the food distribution systems can be enhanced. Questions on food quality and contamination were also asked to establish how consumers' perceptions influence consumption of local food.

In view of the high level of illiteracy in Ghana, the questionnaires were administered directly by trained research assistants. In each selected market, 100 consumers were randomly selected and interviewed by trained research assistants as the consumers come to buy food items.

1.7 Data Analysis

The data collected were analysed both quantitatively and qualitatively and integrated at the report writing stage in line with principles of mixing data. The quantitative data which was captured electronically by various field assistants was transferred onto a platform and analysed using STATA. On the other hand, the qualitative data was transcribed and analysed thematically. In the report writing stage, quotations were used to emphasise key statements. For ethical reasons, pseudonyms were used to ensure that respondents are protected.

1.8 Validation of the draft report

The final draft was presented at a high-level forum on the Ghana food system organised by the Peasant Farmers Association of Ghana. The comments and discussions from the forum has been incorporated into this final report and also into policy briefs and recommendations that will inform OSIWA's next line of action.

CHAPTER 2: AGRICULTURAL POLICY CONTEXTS OF GHANA

2.1 Agriculture in Ghana

Agriculture remains a key sector of Ghana's economy, accounting for 20.1 percent of the Gross Domestic Product (GDP) in 2016 (Ministry of Finance, 2017), employing over 44.7 per cent of the total labour force. The sector is divided into five sub-sectors: comprising of crops sub-sector 64.7 percent, livestock 9.0, fisheries 6.2, cocoa 9.7, forestry and logging 10.4 percent (Ministry of Food and Agriculture (MOFA), 2016).

Smallholder farmers constitute 90 percent farmers with landholding less than 2 hectares, producing about 80 percent of food and livestock in the country (FAO, 2015). According to Ghana Statistical Service, about 75.29 percent and 22 percent of rural and urban dwellers are into agriculture and related activities respectively (Ghana Statistical Service, 2016)

The smallholder farmers are constrained with challenges which include limited market access, land tenure problems, difficulty accessing finance, limited extension services, changing climate, postharvest losses and weak government's agricultural and trade policies. Farming in Ghana is also characterised by rainfed and bad weather conditions such as low and erratic rainfall pattern, increasing temperatures, flooding and depleting soils due to changing climatic conditions and limited access to irrigation

Even though there is increased public investment in the agricultural sector in line with Ghana's commitment under the CAADP in recent times, the sector has experienced some decline in contribution to GDP since 2006, compared to service and industry. See the Table 2 below for details. The increase in cumulative local production of commodities such as maize, sorghum, cassava, and other vegetables has reduced the need for imports. Climate change and other economic incentives is leading to a shift in food crop production in most food growing zones to cash crops such as cashew. The rapid growth in population in Ghana will mean that the gap between local supply and demand of food will widen. More importantly, the low productivity, poor quality of products and global free trade have severely curtailed opportunity to supply the growing urban population and the regional markets. More threatening to the progress of the sector is the huge influx of imports and changing taste of consumers in preference for foreign and processed food. The development has negative implications on market access for smallholder food producers.

Table 2: Percentage contribution to Ghana's GDP by sector

Year	Sector		
	Agriculture	Services	Industry
2006	30.4	48.8	20.8
2007	29.1	50.2	20.7
2008	31.0	48.6	20.4
2009	31.8	49.2	19.0
2010	29.8	51.1	19.1
2011	25.3	49.1	25.6
2012	22.9	49.1	28.0
2013	22.4	49.8	27.8
2014	21.5	51.9	26.6
2015	20.2	53.3	26.6
2016	20.1	54.3	25.6

Source: GSS (2014); ISSER (2017); Revised GDP calculated at 2006 base year

2.2 Agricultural policies in Ghana after independence

Historical analysis of post-independence agricultural policies has established a trend of focused attention on agriculture as engine of growth. Ghana was the world's leading producer of cocoa before and after independence in 1957. The country was also endowed with natural and mineral resources such as gold, diamond, manganese, bauxite and other resources for agricultural activities and was probably the richest in Black Africa. The per capita income in the early 1960s was USD\$500 which was comparable to middle income countries like South Korea, Malaysia and Mexico (Corbo and StanleyFischer, 1995).

As part of the socialist policy, the government decided to pursue a state-led economic strategy of which state farms and input subsidies were prioritized. Nkrumah's Seven-year Development Plan actually stressed on industrialization through domestic production of import substitutes. This was associated with the creation of more agro-industries, input subsidies and provision of wide range of social welfare services such as free education, health care and housing. The seven-year development plan also prioritized agriculture through establishment of co-operative and state farms. In 1962, 26 state farms were established to run commercially. Most of the crops targeted were cash crops such as cocoa, rubber, oil palm, cotton, coconut and fibre.

Unfortunately, the country was met with serious economic challenges due to over reliance on foreign exchange from cocoa and improper targeting of agricultural investments. The fall in world cocoa prices in the early 1960s led to the fall in the country's export earnings making it difficult to fund the numerous social interventions and leading to economic crisis in the mid-1960s.

The military regimes that overthrew Nkrumah and subsequent ones also pursued agriculture policies that were aimed at alleviating the plight of Ghanaian farmers. These policies were by way

of improved marketing, feeder roads, water conservation and irrigation, extension services and agricultural credits. The National Redemption Council which took power in 1972 for instance, reactivated the state farms concept and the workers brigade to increase food production. The “Acheampong Operation Feed Yourself” was launched in February 1972 and became popular as it was expected to increase food production through backyard gardens and import substitution policy. As part of the policy, there was restrictions on importation except agricultural materials and equipment and the Ministry of Agriculture, the State Farms Corporation, Food Distribution Corporation, settlement farms and educational institutions were given specific production targets to meet (Leith and Söderling, 2000).

Unfortunately, due to fiscal indiscipline and poor economic management, combined with a global economic crisis, led to poor economic performance by the Acheampong regime. The last military regime took power on December 31, 1981 and formed the Provisional National Defence Council (PNDC). The PNDC government also prioritized agriculture and asked all Ghanaians to farm. It pledged the Council’s prioritization of agriculture, adding that plans were to achieve a green revolution in the country. Chiefs were encouraged to mobilize their people to establish community farms. Understandably, it was within this period that Ghana witnessed the harshest drought in her history and the need for food was more urgent than any other need. Other poor economic conditions were also far from over. Ghana’s debt in 1982 stood at 105.7% of its GDP. These poor economic figures were compounded by several internal and external shocks that hit the country such as the deportation of over 1 million Ghanaians from Nigeria and the drought that hit the country in the 1982 compelled the government to consult the IMF for support to revitalize the economy.

The structural adjustment programme was recommended to ensure fiscal and budgetary discipline, encourage foreign investors and privatization of malfunctioning state enterprises to reposition the economy for growth. These specific set of policies are linked to the conditional loans of the IMF and the World Bank. Even though there are no consensus on success of IMF programme in transforming the economy, the removal of agricultural input subsidies and privatisation of important agro industries worsened the poverty situation of farmers.

In 1991, the Medium Term Agricultural Development Programme (MTADP) was introduced to provide guidelines for the operation of the Ministry of Food and Agriculture (MOFA) and reposition the sector as the engine of growth. In 1995, Government presented to Parliament the Coordinated Programme of Economic and Social Development Policies with the theme: “Vision 2020” which aimed to make Ghana a middle-income country in 25 year period. The first Medium-Term Development Plan (1997-2000) was based on Vision 2020 which was focused on human development, economic growth, rural and urban development, infrastructure development, and enabling environment for economic growth. This was followed by the Ghana Poverty Reduction Strategy (GPRS I), 2003-2005 and the Growth and Poverty Reduction Strategy (GPRS II) 2006-2009. Consequently, the Ministry of Food and Agriculture formulated the Accelerated Agricultural

Growth and Development Strategy (AAGDS). These policies and strategies were aimed at increasing the average growth rate from 4 to 6 per cent over the period 2001 – 2010. However, structural challenges also emerged, characterized by large fiscal and balance of payment deficits affecting the outcomes of the policy.

The First Food and Agricultural Development Policy (FASDEP I) was implemented to modernize the agricultural sector to ensure growth. However, due to limited consultation, wrong targeting of beneficiaries, poor planning and weak coordination of MoFA with other Ministry and Departments that support agricultural development, FASDEP I failed in meeting its objectives.

The second Food and Agricultural Development Policy (FASDEP II) was therefore developed to enhance the environment for all categories of farmers, while targeting poor and risk prone producers. This was made possible through an extensive stakeholder consultation to incorporate lessons learnt from the FASDEP I.

Among the visions stated in FASDEP II (2007-2015) is the modernization of agriculture. The Medium-Term Agriculture Sector Investment Plan (METASIP; 2010-2015) was developed as an investment plan for the implementation of FASDEP II. FASDEP II comprises six programme areas which represent key investment areas in agriculture, with Food Security and Emergency Preparedness and Increased Growth in Incomes being the major investment priority.

The Ghana Poverty Reduction Strategy (GPRS I and II), and its sequel, the Ghana Shared Growth and Development Agenda (GSGDA I), 2010-2013; GSGDA II, (2014-2017), FASDEP I and II (with the METASIP I and II to implement the policy); are all aimed at modernizing agriculture for growth. Associated with these are programmes and projects such as Ghana Commercial Agricultural Project (GCAP); Multinational NERICA Rice Dissemination Project; Agricultural Mechanisation Centres, Youth in Agriculture with block farming concept, National Food Buffer Stock Company, the Fertilizer and Seed Subsidy Programme were all seeking to modernise the agricultural sector. These policies, programmes and projects however, failed to transform the sector due to poor conceptualisation, wrong targeting and poor implementation. Ingrained in the policies and associated strategies is the notion that small farm units are not viable and amenable to modern agriculture. The smallholder farmers who form majority of farmers in Ghana hardly benefit from such policies and programmes. The subsidized tractors under the agricultural mechanization centres for instance, were hijacked by businessmen and politicians who were not necessarily farmers. The belief in large farms run by educated people encouraged the preference for hijacking of state investments by the elite to the detriment of those the programs were most intended.

In 2017, the government launched a flagship programme called the “Planting for Food and Jobs”. This programme re-emphasised subsidies on fertilizer and seeds; extension services; and market access. With the aim of motivating farmers to adopt certified seeds and fertilizers through a private sector led marketing framework, by raising the incentives and complimentary service provisions

on the usage of inputs, good agronomic practices, marketing of outputs over an E-Agriculture platform, it is expected to incentivise more youth into agriculture and reduce the unemployment rate. A year after implementation, the state of agriculture performance has not changed much, and farmers continue to face the same old problems. Implementation gaps and more especially poor institutional governance and project management lapses are likely to lead to failure of this project just as previous ones. Luckily, a quick learning curve may lead to reconceptualisations and strategizing to target the right beneficiaries with the right support and deal with post-production dimensions of the food chain.

2.3 Agricultural value chain development in Ghana

Promoting agricultural value chain in Ghana has become an important strategy to reduce constraints in agriculture by integrating smallholder farmers into national or international production and trade processes. The weak value chain development was identified and emphasized as a major constraint to commodity development under the Ghana Shared Growth and Development Agenda and further prioritized for investment under METASIP II. The selected crops for value chain under METASIP II, were maize, rice, soya beans, cassava as well as tomatoes and other non-traditional vegetables for export. This was to be achieved through the promotion of nucleus farmer and outgrowers concept and agricultural clusters in the various ecological zones where these commodities are produced (MoFA, 2015). The value chain concept refers to activities that work to add value to a product, increase usage and improve quality from production, processing, transportation, distribution to consumption. A value chain is defined as “activities of getting product or services from its conception, through the different segments of production and delivery to the final consumer or market destination and its final disposal after use” (Kaplinsky & Morris, 2000). Agricultural value chain development is about linking farmers to service providers, input suppliers, processors, packaging, marketing and eventually consumers. Establishing agricultural commodity-based value chains not only empowers potential young farmers, it gives them the tools they need to take ownership of the process and build sustainable markets.

The Agricultural Development and Value Chain Enhancement (ADVANCE) project supports the scaling up of agriculture investment to improve the competitiveness of the maize, rice, and soybean value chains in Ghana. The project adopts a facilitative value chain approach where smallholder farmers are linked to markets, finance, inputs, equipment, and information through larger commercial farmers and traders who have the capacity to invest in smallholder production. However, this project is limited in coverage, and characterized by weak participation of some actors such as financial institutions and input providers in supporting smallholder farmers. The linkages of the value chain actors in Ghana is shown in Figure 1, which shows that efficient food production requires a combination of available and efficient extension services, quality inputs, appropriate mechanization services and available postharvest actors. Weak linkages and poor financial services may lead to low production, poor quality and high postharvest losses. Access to finance and inputs will also help the farmer to take decision on what to produce, where to produce,

scale of production and type of technology to adopt. Adequate financing also helps in the smooth operations of agro-input companies, processing companies, warehouses, transport companies and mechanization companies to import, process and distribute their wares.

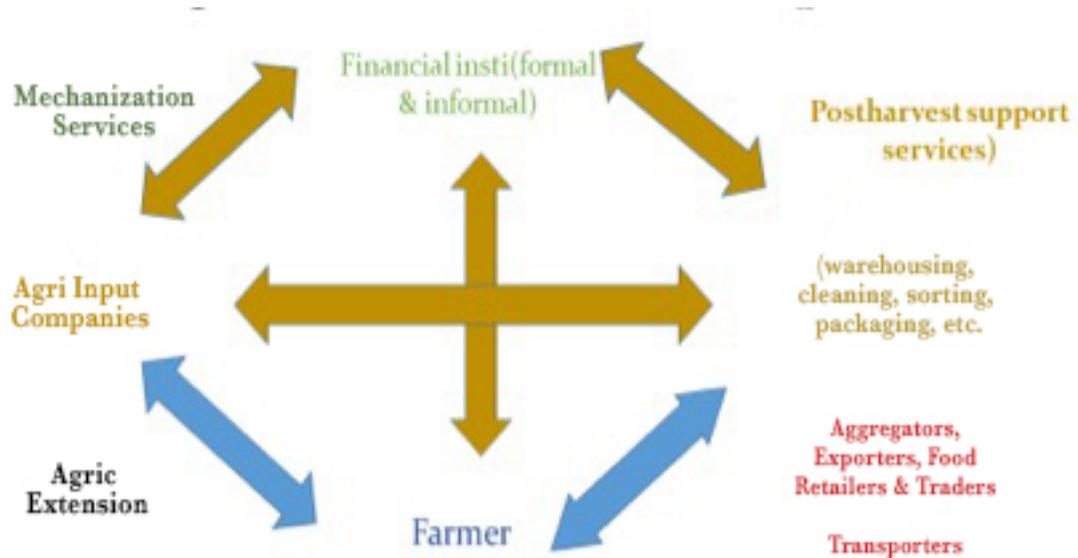


Figure 1: Agriculture Value Chain Concept

There are two main value chains in the agricultural sector in Ghana: Input and output value chains. The input value chain encompasses those involved in the steps leading up to the harvest. These include actors whose function contribute to effective production and consumption and not necessarily involved in the production process. These include agro-dealers, who sell farmers agro-inputs and provide information on their use or producer organizations that help farmers learn more effective farming techniques. The following also fall into this category: financial institutions, service providers and other support services (FAO, 2013)..

The constraints in the Ghana input value chain range from low intake of inputs such as fertilizer, seeds and also financial constraints. Also, problems of scale and distribution centers needed in farming communities where services are most needed. Poor quality inputs, state policies, taxation, poor rural infrastructure, fragmented and dispersed nature of smallholder farmers are some of the challenges for effective input value chain (NDPC, 2010).

At the production stage, farmers are confronted with problems with land tenure, high levels of illiteracy among farmers, limited knowledge in agronomic practices, poor farmer extension ratio, poor input (fertilizer and seeds) access and application and reliance on outmoded method of farming (MoFA, 2015)..

At the harvesting level, lack of appropriate postharvest technology, poor transportation network, poor storage facilities, poor quality product and poor marketing arrangement. The poor linkages in the value chain is a major factor in the food distribution in Ghana. The concerns of glut of perishable foods such as watermelon, cabbage, tomato, and pepper as well as seasonally is a case in point showing weak linkages the value chain.

2.4 Policy Analysis

The preceding presentation shows that while agricultural policy has gone through several twists and turns, most of the recent policies provided incentives for large-scale farmers at the expense of the smallholder farmers. While the colonial administration supported smallholder farmers due to fears that establishment of plantations will alienate peasant farmers which can cause political instability and undermine the colonial government, the early post-colonial government pursued a state-led economy of which large state farms were prioritized. Most of the crops targeted were cash crops such as cocoa, rubber, oil palm, cotton, coconut and fibre. Between 1980s and 2000, the removal of agricultural input subsidies and privatisation of important agro industries, as part of Structural Adjustment Programmes, worsen the poverty situation of small holder farmers.

Since the year 2000, the agricultural policies attempt to deal with broad development issues including a secure food supply; better integration into local, regional, and international markets; sustainable management of land and environment; application of science and technology to food and agriculture; and enhancing private sector partnerships. While recent policies to modernise the agricultural sector recognises the need to support small-holder farmers, they tend to target only the production part of the agriculture value chain, by providing input, such as subsidized fertilisers to some farmers. Most of the narratives on agricultural commercialisation continue to focus on strategies to increase output. While the marketing of a few cash crops has been prioritized and managed by marketing boards (e.g. Cocoa Marketing Board) since the colonial era, there has been very limited focus on the marketing of food crops. There is very limited policy focus enhancing farmers' access to both domestic and international markets. We have argued that the non-prioritization of marketing and the over-emphasis on production still shows that the government is preoccupied with an older productivist discourse which does not seem to recognize the fact that enhancing the marketability and productivity of crops will eventually lead to increase production.

CHAPTER 3: THE FOOD SYSTEMS OF GHANA

3.1 Introduction

This section introduces the concepts of food systems within the broader systems thinking framework and moves on to detail the national and local food systems of Ghana. The availability and cost of food in the modern state are mainly the result of political decisions that define the technical, economic and social organisation of production, distribution and consumption of food. The emerging complexities of societies due to global interconnectedness, urbanisation, technologies, and population dynamics, have modified the simple food systems of old into highly complex interconnected and sometimes unsustainable systems. The need for more efficient and sustainable food systems that satisfies both local demands as well as national and global context has become ever more important. Food systems are important in understanding the different dimensions of food security, an important policy objective of the government of Ghana.

3.2 Conceptualising the food system links

Food systems consists of a set of activities ranging from production through to consumption. In any commodity system, the producer makes decisions of what to produce and in what quantities based on consumers demand for it. Between the producer and the consumer are a series of interrelated activities motivated by ecological, infrastructure, economic, culture, technology, policies, and personal idiosyncrasies. The commodity system can be visualized as a cycle, beginning from production planning through production, harvest and distribution to consumers, thereby setting the stage for the next cycle (FAO 2017).

This study adapts the Global Environmental Change and Food Security (GECAFS) framework (see Figure 2). The framework integrates socioeconomic and global environmental change drivers to understand future changes in food security. The GECAFS food systems concept broadly identifies two sets of activities – food system activities and food security outcomes and brings the discourse on food systems into a wider perspective that incorporates the mediating drivers and feedbacks relative to the overall social, economic, political, physical and environmental conditions.

The food system activities are grouped into four categories and each category has its own set of actors that interact to drive related activities. These activities relate to (i) producing, (ii) processing, (iii) packaging and distributing and (iv) retailing and consumption. The food security outcomes and their elements are grouped into three categories, namely (i) food availability as shaped by production, distribution and exchange, (ii) access to food as determined by affordability, allocation and preference and finally (iii) food utilization as affected by nutritional value, social value and food safety (Ingram, 2011: 420). According to Eriksen (2007, p. 1), a comprehensive and holistic analysis of how the current organization of food production, processing, distribution and

consumption contributes to food security requires broadening the concept of a “food system” beyond only those activities, to other economic, social, and environmental drivers. Food system thinking considers how all components and actors of the food system are interrelated and can be affected by incentives or interventions that change final outcomes (Herforth, Lidder, and Gill 2015).

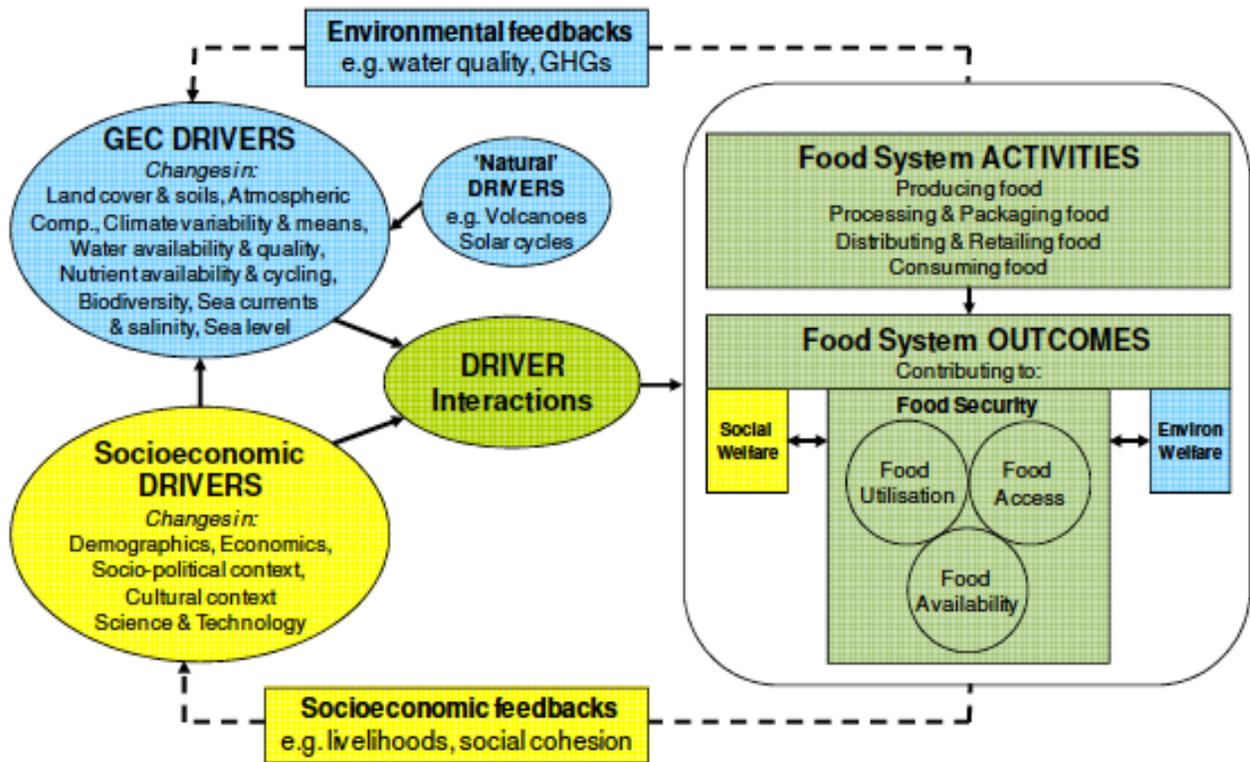


Figure 2. Food security, food systems and drivers of vulnerability. Source: Ingram (2011:421).

There are several drivers of food system activities, including actors and outcomes. Broadly these include biophysical and environmental; political and economic; innovation and research; socio-cultural; and demographic drivers (Ingram, 2011). The amount and quality of natural resources and environmental processes constitute the foundation for farming. Farmers rely on a set of incentives and constraints in making decisions on production produced by policy and economic conditions. Political and economic systems interact to define the system of infrastructure, science and technology that various actors have at their disposal for efficient operations. The choices of people as defined by their socio-cultural orientations are important in influencing the general orientation of the food system.

Beyond adapting the GECAF framework's idealised components, we seek to provide the descriptions of appropriate components of local and national food systems in Ghana and explain the relationships, processes and structures influencing the system as a whole. A systems perspective is adopted whereby everything is related to everything else. The malfunctioning of one part transmits shocks through the whole system leading to threats and opportunities. The welfare of actors in the system can therefore be manipulated through careful policies targeting specific links to produce particular outcomes. Unfortunately, some outcomes result from uncontrollable processes such as structural global economic shocks and environmental changes. It takes time to abate these through smart adaptation programs and international negotiations.

By employing a political economy framing that recognises the role of power and politics embedded in institutions of governance, we intend to avoid the naivety of conceptualising food systems as neutral systems with determined logical feedback relationships. Interpreting physical processes as refracted through the lenses of socio-economic relations is an innovative approach in dealing with multiple causality where human agency and societal structures coproduce events as the livelihood and food insecurity conditions of smallholder farmers.

The next sections provide a vivid image of the food systems as observed from each of the four study regions.

3.3 The Food systems of Ghana

The bulk of food in Ghana is produced by smallholder farmers located across the different ecological zones which grow the food variety the country enjoys. There are few large farms specialising in specific crops especially oil palm, rubber, banana, pineapples, rice and fruits. Medium scale farmers are emerging in all regions where incentives for production is good such as the mango zone of Somanya, Maize zone of Tumu, Rice of Volta region, Watermelon spots in Brong Ahafo region. Ghanaian consumers still purchase majority of their foods from local production. However, Ghana is a net importer of a number of key agricultural products, such as rice, wheat, sugar and poultry (FAO, 2015). This reflects a wider global trend towards the consumption of meat and dairy and refined food products as urbanization and global interconnectedness increases. Figure 2 shows the food systems in Ghana comprising of activities from food production, through to consumption and back to farmers planning for production. A summary is given below (detailed treatment follows in the chapters below).

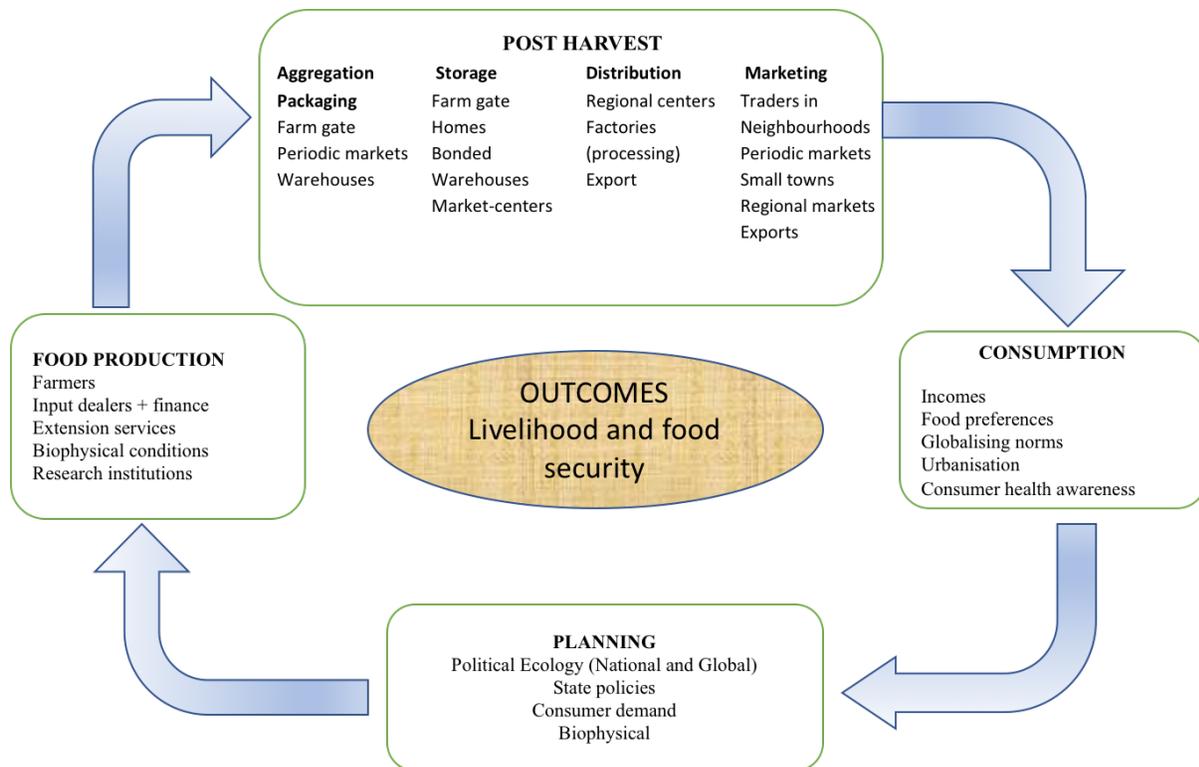


Figure 3. The food systems in Ghana

3.4 Food production stage

A differentiated group of farmers in Ghana constitute the main actors in the production component of the food system. They grow crops according to ecological favourability and market demand patterns. In all the zones, farmers stressed the importance of profitability over environmental suitability, even though the former defines the possibility of production of any crop. This is evidence of the degree of market integration of Ghanaian farmers who are clearly price-responsive and act in line with consumer demand. Based on choices made with regard to a combination of crops for a season which should also fit with the qualities of land owned, the farmers interact with input dealers, extension agents, NGOs, labour markets and financial agents to run productive activities. From all the sites, commercial production rather than subsistence farming was the norm. Farmers prioritised some crops for commercial in addition to one or two crops for home consumption. Our survey did not show the much written about subsistence farmers but rather an active group of farmers struggling to earn an income to sustain the livelihoods of their families.

The six main crops cultivated in the sites included: Plantain, Cassava, Maize, Pepper, Tomatoes, and Garden eggs in Eastern Region; Groundnuts, maize, rice, soybeans, watermelon, and yam for the Northern Region; tomatoes, water melon, okra, cassava, green pepper and chillies for Greater Accra; yam, maize, cassava, tomatoes, watermelon and beans in the Brong Ahafo Region The

choice of crops is now purely motivated by commercial returns, even though a history of expertise/local knowledge over a given crop reinforces this factor. Entry barriers to new cash crops being mainly technical know-how and access to suitable lands.

Farmers interact mainly with input dealers, government extension agents, market women, financiers, land owners, regulators and NGO workers in meeting different aspects of their farming operations. These actors play varying roles in knowledge and technology dissemination, financing, access to lands and marketing. Many farmers have poor access to extension services and NGO workers due to limited number of agents and limited project focus. State regulators are hardly ever known to farmers even though these are supposed to examine product safety and quality, standardization, environmental practices, varieties and new plants, etc. Agencies that play these functions include the Food and Drugs Board, Ghana Standards Board, Environmental Protection Council, and the Plant Protection Agency. In all the regions with open terrain without forest, the use of mechanization is very high, which is also a reaction to labour constraints and increasing farm sizes of commercial farmers. All focus group discussions indicate an increasing accumulation of wealth by farmers gradually over the years as vulnerable farmers drop out of farming.

The production sphere in Ghana is currently influenced by the Planting for food and Jobs Program which makes inputs available to enhance productivity, bring more land under cultivation, encourage the youth into the sector and create jobs to deal with unemployment. Beneficiary farmers in the Northern and Brong Ahafo regions were full of praise for the program except for vulnerable groups such as female farmers and most illiterate farmers with less information. However, in the Eastern Region, the program's focus on fertilisers and cereals was of less relevance, and even farmers who received fertilisers complained of their inappropriateness for their soils. Unlike the support of the state for cocoa in the same region which is highly successful, that for food crops was poorly targeted and not aimed at farmer's prioritized needs. Input availability still remains a major constrain to farmers, not only in terms of affordability, but also quality as there is a proliferation of input dealers importing uncertified/untested products.

The various regions are endowed with a diversity of soil types and valleys that enable various combinations of cereals, tubers, and vegetables to be cultivated. Access to land and prices of land tends to reflect the returns to the crop. Though in the Northern Region case, the land is still freely given out, farmers expressed difficulty in accessing fertile and valley lands for high value crops such as watermelons, vegetables and rice. In the Eastern Region, the value of land for vegetables which is claimed to provide the most returns is pegged at 150 GHC per acre for three months rental period. Values of land in the communities in the Brong Ahafo Region tended to be uniform at 100 GHC irrespective of crop. The fertility of lands is reported all over to be on the decrease, except for bushlands in the Brong Ahafo Regions.

Beyond access to land as the major determinant, the success of the venture is highly dependent on climate which is reported to be unpredictable and disappointing. Surprisingly, the Eastern Region

in the heart of the forest had the strongest misgivings for the climate. Climate change simply put, now defines the success or failure of any farming venture, as explained by participants of the Focus Group in Nankuma, Brong Ahafo Region. Given all other factors constant, the distribution and amount of rainfall correlates with crop productivity and total outputs as affirmed by all participants in the regions. Climate change and its projected impacts are adding a new layer onto existing problems in the global food system (Godfray et al., 2010).

The food production stage contributes to the majority of livelihoods of households in rural Ghana and accounts for food availability and access through its direct contribution to food and indirect contribution to incomes used for procuring food. Majority of non-farm activities are directly resultant from farming except in mining and logging regions. The different commodities generate different feedbacks and multipliers with varying consequences.

3.5 Post-Harvest stages

Farmers produce various food items for sale to consumers through several outlets. Increasingly, there is value-addition on farm and on-village through processing, cleaning, sorting and packaging. These activities are done by both farm households and traders of food. In the Brong Ahafo and Northern regions, the use of tractors to process harvested maize, groundnuts and rice has gained currency over the past five years, replacing the manual processes. The yam farmers of the Brong Ahafo region sort yams by sizes and variety and ensure that broken pieces are not added to consignments. Rice is no longer thrashed on the bare floor but on protective floor covers to ensure stones do not contaminate them, while recently introduced rice mills by the state and private owners is used to mill rice into a higher value product. There is a thin line between harvest and post-harvest activities as farmers increasingly also perform value-added services to their products.

The majority of food products are purchased by aggregators who are well known by farmers producing above some thresholds. Smaller farmers with smaller harvest often sell their products in periodic markets in towns and large communities. Aggregators patronise these markets to purchase from wives of farmers, farmers and village traders. The major output purchased is from medium scale farmers who sell at farm gate to aggregators with trucks. Scale is related to the type of crop. For instance, yam, watermelon and tomato farmers with three acres are considered medium scale producers because their output value and cost of investment is as high as what is needed for a 10-acre maize or cassava farm. Most aggregators deal with some permanent farmers as their customers with whom they share market and technological information. Most of the farmers even received financial assistance from the traders who in turn pick their farm produce, sell and pay the difference between money loaned and actual sales.

Storage has become an important activity and an emerging big business. The government's buffer stock company though not very effective has introduced the concept to new entrepreneurs putting up warehouses for rent to aggregators and farmers. In Diare, four entrepreneurs have built warehouses nearer to the government facility where traders and farmers store their wares. In the

market of Savelugu and Tamale, traders have rented large spaces where they store and package their wares for resale to other markets with better prices. Also, these stores according to the traders enable them sell when prices are higher than at the time of harvest when there is glut. Depending on the nature of the crop, farmers store the crop on the field until there is market or a good price for it. Yam is often left unharvested or specially stored under good shade trees in cool trenches. Farm sheds in secure locations also act as warehouses for farmers. Perishable produce such as tomatoes and vegetables are hardly stored due to the lack of a modernised storage for perishable agricultural produce. The viability of this sector is based on a ready market from consumers.

Aggregators often buy from farm gate and transport to regional centres with high prices. Most aggregators sell to all major markets of Kumasi, Accra, Ashaiman, and Takoradi. Surprisingly, few aggregators sell to Techiman which is supposed to be a major market in Ghana. The reason being that Techiman itself is an aggregator market with fewer local consumers. Hence, to survive the high transport cost, aggregators transport their wares from even the remotest of villages to the main consumption centres of Kumasi and Accra. According to the market queens interviewed, Techiman has therefore become important mainly for non-perishable items such as maize stored in anticipation of price increments, and also for aggregating from small farmers without the large outputs to supply major aggregators.

Sales to factories has experienced a boost in recent years as many more crops are being processed. Oil palm has traditionally been the main crop purchased by factories. However, increasingly rice is purchased by rice mills assisted by NGOs, while maize, cassava and sorghum are purchased by the breweries and food processors. Agents of these companies may even have agreements with aggregators and farmer-based organisations for purchasing them. The export market is an important outlet especially for fruits, yams and chillies. Asian businesses are mainly interested in chillies while African shops abroad import yams and other processed food items.

Marketing of farm produce is therefore done at different levels depending on scale of production, season, and type of agent, perishability and storage. Periodic markets dotted all over the regions and districts are the most important and most accessible to farmers. Farm gate sales are only for relatively richer farmers. Increasingly, due to rapid peri-urbanisation, neighbourhood petty traders in food serve as outlets for food items purchased from farmers or major markets where aggregators have competitive prices. Supermarkets are still not an important outlet for marketing due to their preference for selling foreign items to meet the needs of their clientele. Only a few exotic products, mainly fruits make it into supermarkets and foreign-owned hotels and restaurants.

Transportation is the main grease for the food system ensuring the movement of people and goods from farm gate to markets and inputs to farms. Most of the inefficiencies of the food system in Ghana emanates from the poor transport system and its governance. All our participants bemoaned the poor state of roads between farm villages and the nearest towns and the non-existing roads and tracts from farms to villages. This leads to high cost of transport and high rates of perishability

along the chain of distribution. Where prices of food products fall in major markets, many farmers comparing transport fares may abandon crops on the farms to rot. A case in point is watermelons and tomatoes in the Brong Ahafo and Northern regions. Also, the bad roads also lead to frequent breakdown of the mostly second-hand home-used trucks imported into the country for such rural-based travels. Hardly does one come across a new truck transporting agricultural produce. This is a syndrome of poor transport governance emanating from regulations for importation of vehicles. Economically, the returns to using newer vehicles which cost much higher on bad roads is low. Police harassment and non-enforcement of road regulations due to bribery and corruption reduces compliance on the roads and increases the cost of doing business. The long duration used by drivers to arrive at their destinations due to the frequent unnecessary stops by police is a major impediment to the food system with negative multipliers to the entire agricultural sector (collated from interviews with drivers, vehicle owners and traders in four markets).

3.6 Food consumption stage

The consumption of food in Ghana is socio-culturally differentiated with major zones of dominance for particular food crops (see chapter 6 on consumers' perspectives). The ecological distribution of food production coincides with consumption of particular foods, such as millet, maize and yam in the Northern Region, then cassava and plantain in the eastern region, and maize, cassava, fruits in the Brong Ahafo region. The main dishes of the people define the food product needed to make it, such as cassava for fufu eaten widely in the south, while yam is used for fufu eaten in northern Ghana. Maize has become a national food crop for dishes such as TZ, Kenkey, Banku, and Akpele. Rice is fast becoming a main dish in Ghana with all regions recording increasing consumption of the product, both locally produced and imported. Our interviews and survey data show a predominance of consumption of locally farmed foods. With the exception of rice and onion, Ghanaian farmers provide most of the food eaten by households.

The population of Ghana has increased dramatically over the past three decades leading to huge pressures on food resources. The urban share of the population has increased to 49% necessitating more production to meet the increasing imbalance. These two trends have created opportunities for a commercial agricultural sector using more inputs to increase productivity. Urban incomes are higher than rural ones with a larger diversified base often providing synergistic opportunities for the rural sector and population. Shortfalls in supply of specific food commodities such as vegetables, rice, dairy, fish, meat, and animal feed has led to importation at huge cost.

Incomes are a major determinant of access to food and even availability. Regions with higher incomes also house the biggest markets where all food from all regions congregate. Consumers with higher incomes therefore make choices of higher quality products and may purchase in larger quantities because of their ability to store even perishable products. Buying in large quantities also guarantees discounts. Though food is not produced in big cities, higher incomes and improving transport systems has guaranteed a sturdy flow of food items from seasonally diverse regions

thereby making products always available. Comparatively, consumers in smaller towns tend to be limited to seasonally available foods due to the limitations of economies of scale which is a disincentive to traders and limits supplies to such markets.

Farm households themselves constitute a huge source of consumption of farm produce. Where food crops are produced for the market, farmers simply kept the amounts needed for household consumption. However, farmers who diversified into high value horticultural products make enough profits to procure cheaper foods from local markets. Self-provisioning of over 70% of food is the norm among farmers in Ghana. Farmers tend to follow a cultural orientation in the choice of food crops which is defined ecologically over the years. Due to migration between ecological zones for land and participation in profitable export crops, the traditional food cultures are merging. For instance, *waakye* (rice and beans) is now popular in the south, while many northerners have added *banku* (from fermented corn) and *fufu* to their diets.

The influence of globalisation on Ghanaian diets is important in understanding changes to our food system. The increasing importance of bread made from wheat, and that of continental dishes relying on the use of white imported rice reflects the changing diet composition. Also, imported animal products reflecting increasing wealth and a global food ethos for the urban middle classes is changing urban Ghanaian diets from purely carbohydrate-based to a protein-based diet. Unfair global trade has not enabled Ghanaian livestock sector take advantage of this changing trend. However, on the whole, the majority of consumers in Ghana including the middle and upper classes still eat predominantly Ghanaian foods.

3.7 The planning stage

The food system is cyclical, showing the interactions among the various components which transmit forward and backward linkages throughout the system. Farmers' decisions are influenced by biophysical conditions and politico-economic interventions. A productivist approach to agricultural development has been adopted by the government of Ghana over the decades following a neoliberal paradigm of development. Increasing productivity through agricultural modernisation is an important policy goal. Strategies for achieving these have mainly been political since Ghana became a democracy. Also, the state struggles between its position on supporting smallholders and larger farmers thereby creating a landscape of struggles for dominance in which smaller farmers lose out. Access to resources for production is not a neutral terrain but one involving struggles between different constituencies and sometimes bedevilled with alleged corruption and mismanagement.

The changing biophysical conditions, especially soil fertility and climate change, are important considerations in planning for production. However, the ecology of a place alone does not define the land use. The economic viability and state support in terms of technology, access to markets, processing and transport are all important. Farmers admitted that the state's support of infrastructure has been a major determinant in opening up or reducing the productivity of some

geographical spaces. Policies of mechanisation, especially tractorization has been very useful in dealing with the labour shortages of the transition and savannah zones where the landscape is amenable to mechanisation. The availability and affordability of inputs enabled by subsidy programs has greatly pushed the Ghanaian Green Revolution forward.

The decision to farm what crop, at what scale and for what purpose using which technologies emerge out of the complex interplay of biophysical and socio-economic and political factors. The relative importance of each factor is embedded within the general global and national economic structures. The local context is important but lends itself to structural constraints from scales above it, due to the increasing commercialisation of agriculture and changing dietary composition of the population.

CHAPTER 4: PRODUCING FOOD IN GHANA

4.1. Introduction

This section focuses on farming activities in the four agro-ecological zones of Ghana. The section is largely based on data collected through in-depth interviews, focus group discussions and survey on a sample of 400 farmers selected from the northern savannah zone (represented by two communities chosen from Savelugu district in the Northern Region), transitional forest zone (represented by two communities chosen from Nkoranza district in the Brong Ahafo region), forest zone (represented by two communities chosen from Fanteakwa district in the Eastern region) and the coastal savannah zone (represented by two communities chosen from Ada West district in the Greater Accra region). The section begins with a brief presentation of the socio-demographic characteristics of the respondents. This is followed by an assessment of production activities, with particular reference to the crops produced, use of inputs, farm mechanisation, and government support to farmers. The last section of the chapter deals with challenges facing farmers and opportunities for enhancing food production in Ghana.

4.2. Socio-demographic characteristics of the farmers

The data generated shows that, in all the four regions studied, majority of the farmers were males. Of the 400 farmers interviewed, 278 (69.5%) were males. When differentiated by region, the proportion of farmers that constituted males varies from 62% in the Brong Ahafo region to 81% in the Eastern region. The relatively lower number of female farmers is expected given the fact that farming in Africa is traditionally considered as an occupation for men (Dancer and Tsikata, 2015). Again, as a result of patriarchal norms that construct men as superior to women, men are often considered owners (or managers) of family farms even though both men and women may work regularly on these farms (Apusiga, 2009).

The average age of the farmers interviewed was 42.1 years and did not significantly vary across regions. This shows that, in general, only a few younger persons are going into farming. This is a national problem which has prompted the government of Ghana to implement a *youth in agriculture programme* aimed at encouraging the youth to go into farming. It has not achieved the desired results. During the focus group discussions in the Greater Accra region, the farmers noted that one reason why young people do not want to go into farming is the general perception that farming is tedious and not profitable. It also came out that the children of relatively poorer farmers are likely to become farmers because of low level of education, while the children of relatively wealthy farmers are more likely to migrate to urban areas to work in offices because they tend to be more highly educated. It is believed that if agriculture is modernised and made more profitable, more young persons will go into farming especially given the high level of unemployment in Ghana.

With regards to level of education, the data shows that many of the farmers have little or no formal education. As shown in Table 3, about 38.75 % of the farmers interviewed had no education. Only 15% of the farmers have secondary or higher education. Educational status among the farmers varies significantly from one region to another. The proportion of farmers with no education is highest in the Northern Region (71%), followed by the Brong Ahafo region (44%), Greater Accra region (28%) and lowest in the Eastern Region (12%). The low level of education among farmers is quite disturbing given the fact that ability to read and write is useful for accessing credit, adopting new farming technologies and generally operating agribusinesses in Ghana.

Table 3: Educational level

Level of education	Region				Overall
	Greater Accra	Eastern	Brong Ahafo	Northern	
No formal education	28	12	44	71	155
	18.06	7.74	28.39	45.81	100
	28	12	44	71	38.75
Primary	16	7	14	12	49
	32.65	14.29	28.57	24.49	100
	16	7	14	12	12.25
JHS/Middle	35	58	32	8	133
	26.32	43.61	24.06	6.02	100
	35	58	32	8	33.25
SHS/'O'level/'A'level/Vocational	13	20	9	5	47
	27.66	42.55	19.15	10.64	100
	13	20	9	5	11.75
Tertiary	8	3	1	2	14
	57.14	21.43	7.14	14.29	100
	8	3	1	2	3.5
Non-Formal Education	0	0	0	2	2
	0	0	0	100	100
	0	0	0	2	0.5
Total	100	100	100	100	400
	25	25	25	25	100
	100	100	100	100	100

Pearson $\chi^2(15) = 115.1224$
P-value = 0.000

4.2.1 Sources of Income and Livelihoods

As shown in Table 4, although most of the farmers have multiple sources of income, about 92% of them ranked *crop production* as their main source of income. Another 5.7% ranked crop production as their second main source of income. About 9.2 % of the farmers also ranked *trading* as the most important source of income. This means that a significant proportion of farmers combine farming with off-farm income generating activities. Indeed, women in particular were more likely to combine farming with trading. Keeping of livestock is another important source of

income for many farmers. About 52% of the farmers ranked livestock as the second main source of income and this shows that more than half of crop producers also keep livestock. During the in-depth interviews, some farmers indicated that the keeping of livestock is an important form of livelihood diversification as the livestock can be sold in times of crop failure or low prices for their farm produce. Other farmers reported that the livestock can sometimes be sold when they need money urgently for emergencies such as medical bills. In some cases, animals such as goats and sheep are consumed by the farmers especially during Christmas and other celebrations.

Another major source of income is casual labour. About 2.5% of farmers ranked this as the first most important source of income, while 15.5% of the farmers ranked it as the second most important source of income. Our data showed that some relatively poorer farmers straddle between farming on small plots of land and wage employment to enhance food security. Our findings are consistent with the results of earlier studies which indicate that straddling between wage employment and farming is an important livelihood strategy for many smallholder farmers, and showed the best food security outcomes, compared to only low paid permanent employment or only farming on very small plots (see Yaro et al, 2017a). The implication of these findings is that efforts to help farmers diversify income sources can leverage on already existing alternative income generating activities, such as keeping livestock, trading, and casual labour.

Table 4: Farmers' Ranking of three Main Sources of Income in the Last 12 Months

Source of Income	Ranks					Total
	1st	2 nd	3rd	4th		
Crops	N	368	23	8	1	400
	%	92.0	5.7	2.0	0.3	100
Livestock	N	6	209	53	132	400
	%	1.5	52.2	13.3	33.0	100
Casual labour	N	10	62	173	155	400
	%	2.5	15.5	43.2	38.8	100
Trading	N	37	53	61	249	400
	%	9.2	13.3	15.2	62.3	100
Salaried employment	N	14	27	15	344	400
	%	3.5	6.8	3.7	86.0	100
Remittances	N	3	10	49	338	400
	%	0.7	2.50	12.3	84.5	100
Pension	N	21	4	10	365	400
	%	5.25	1.0	2.5	91.25	100

4.3. Production of Food Crops

The study shows that most of the farmers produced many food crops at the same time. On the average, farmers in the Eastern and Brong Ahafo regions, where climatic conditions are more favourable, produce three major crops while those in the northern and coastal savannah zones, where rainfall patterns are unfavourable, produce 2 major crops at the same time. In many cases, mixed cropping is practiced. The production of many crops is due to the fact that farmers want to maximise output from the land. Some farmers also practice mixed cropping as an insurance strategy to deal with climate variability that may cause crop failure and or marketing challenges for individual crops. Also, since the farmers consume some of the crops produced, mixed cropping helps them to deal with their own food insecurity problems. Despite this, certain crops are more likely to be cultivated than others. The crops that are mainly cultivated vary from one region to another (see Table 5) although maize, yam and vegetables are grown in all the regions. Most of the small holder farmers are into food production for local consumption but they also sell to industry and for export.

As expected, ecological conditions, especially soil suitability and climate, determine strongly the possible crops that can be grown in each of the region (see Table 5). In the Northern Region of Ghana, the three most important crops produced are groundnut, maize, and rice. These are crops do not require a lot of water and can do well in semi-arid regions. As shown in Table 9, the proportion of farmers that ranked groundnut, maize and soya beans as the first most important crops cultivated was 53%, 32% and 8% respectively (see also Appendix). Soya beans, watermelon and yam were also mentioned as other very important sources of income to many farmers in the northern savannah zone. Similarly, in the Greater Accra region which also has semi-arid climatic conditions, the crops cultivated are tomatoes, pepper, watermelon, cassava, maize, okra, and garden eggs. In terms of importance of these crops to the farmers, about 73% of farmers in this region ranked tomato as the first most important crop to them. Another 16 % ranked pepper as the first most important crop to them while 10% of farmers in the region ranked watermelon as the first most important crop to them (see Table 6 and appendix). In the Eastern region (i.e. forest zone), the most important crops cultivated by the farmers are pepper, plantain, tomato, maize, garden eggs, cassava, beans, cocoyam and cocoa. In terms of importance, about 34% of the farmers in this region ranked pepper as the most important source of income. Another 32% of farmers ranked plantain as the most important crop, while 16% of farmers ranked tomato as the most important crop, (see Table 7 and appendix). Finally, in the Brong Ahafo region, the most important crops identified by the farmers were maize (chosen by 43% of farmers as the most important crop), yam (chosen by 23% of farmers as the most important crop), watermelon (chosen by 17% of farmers as the most important) and cassava (chosen by 11% of farmers as the most important crop) (see Table 8 and appendix). Other crops that are cultivated by farmers in the Brong Ahafo region include sweet potato, pineapple, cocoa, rice, groundnut, banana, cashew, carrot and cabbage. The

high variety of food crops grown in this region supports its recognition as the ‘food basket’ of Ghana.

Table 5: Major Food Crops cultivated in all the regions

Region	Major food crops produced in various regions in order of importance
Northern Region	Maize, Groundnut, Rice, Soya Beans, Watermelon, Yam
Greater Accra Region	Tomatoes, Pepper, Watermelon, Cassava, Maize, Okra, Garden Eggs
Eastern Region	Pepper, Plantain, Tomato, Maize, Garden Eggs, Cassava, Beans, Cocoyam, Cocoa
Brong Ahafo Region	Maize, Yam, Watermelon, Cassava, Potato, Pineapple, Cocoa, Rice, Groundnut, Banana, Cashew, Carrot, Cabbage

Table 6: Most important crop cultivated in Greater Accra

Crop	Frequency	Percent
Cassava	1	1
Pepper	16	16
Tomato	73	73
Watermelon	10	10
Total	100	100

Table 7: Most important crop cultivated in Eastern Region

Crop	Frequency	Percent
Cassava	4	4
Garden Egg	5	5
Maize	9	9
Pepper	34	34
Plantain	32	32
Tomato	16	16
Total	100	100

Table 8: Most important crop cultivated in Brong Ahafo

Crop	Freq.	Percent
Cassava	11	11
Maize	43	43
Pepper	2	2
Tomato	4	4
Watermelon	17	17
Yam	23	23
Total	100	100

Table 9: Most important crop cultivated in Northern Region

Crop	Frequency	Percent
Groundnut	53	53
Maize	32	32
Rice	8	8
Soya bean	6	6
Watermelon	1	1
Total	100	100

The major factors that determine the types of crops farmers produced include: good ecological conditions (climate, soil etc.), ease of production, and marketability. Other relatively less important factors include availability of inputs/government support, knowledge of production and low cost of production, and consumption requirements. The role of these factors varies from region to region and from one crop to another (see appendix). For all types of crops, ecological conditions (soil and climate) were more often cited as determinants of the choice of crops to cultivate in northern Ghana than other regions. This may be explained by the fact that the semi-arid conditions in the region places a limitation on the variety of crops than can be cultivated. Across all the regions, ease of production, favourable ecological conditions and households' consumption were more often cited for the choice of crops in the roots and tuber/sucker, while marketability is often cited for vegetables. While ecological conditions prescribe the set of crops that can be grown, interviews with farmers show that the major determining factors of the type of crop they actually cultivate is the marketability which influences price and profitability. Some farmers also strongly consider the cost of producing a crop and their household's consumption requirements. The views of farmers on the determinants of crops that are cultivated are captured in the statements in Box 1.

Box 1: Farmers views on determinants of crops cultivated

“We all go in for some crops because of the price and market availability (Focus group participant, Fanteakwa South-Begoro)

“High profitability, market access, favourable and good land for cultivation are the things that influence my choice of crops (Josh, Begoro)

“I consider the price, available market and my household consumption. For the price, vegetables are preferred but I also cultivate yam and maize for consumption (Mercy, Nankuma, Nkoransa South- Nankuma)

“We cultivate tomatoes, pepper water melon, okra, garden eggs. We were largely cultivating cassava but we have stopped because there is no market for it.... The market is the sole decider of what type of crops we produce in this community” (Steve, Focus group participant, Ada, Greater Accra).

“Cocoyam had seen a decline in production. This is because of the introduction of vegetable farming. Again, the excessive use of weedicides destroyed the cocoyam” (Evano, Fanteakwa South-Begoro)

“At first there used to be plenty “brobe” (Tallow) here but right now it’s gone” (Atter, Fanteakwa South-Begoro)

The quotations above show that many of the farmers are producing vegetables because the profit margin is higher. However, one must be careful in drawing a general conclusion on this as the choice of crops to cultivate also depends on the farmers financial circumstances. Some farmers indicated that it is very expensive to cultivate vegetables and fruits and as such they go in for the cultivation of other crops as highlighted in the statements below:

“Yes; it is due to input access that’s why this year I am cultivating plantain, cassava and maize. This is because vegetable farming is expensive (Oko, Begoro,)

“It depends also on cost of production. For instance, garden eggs production requires a lot of input (finance), therefore I sometimes shift to cultivate okra” (Dawud, Fanteakwa South-Begoro)

Again, as indicated in the quotations in box 4.1, even though root tubers (e.g. yam and cassava) are not very profitable these days, almost all the farmers in the Eastern, Greater Accra and Brong Ahafo regions cultivate these crops on small scale for their own consumption. As shown in the statement below, some farmers cultivate cereal to feed their families while at the same time cultivating other crops for commercial purposes.

“The reason for which I farm maize is that, our main meal is TZ. If I do not farm it, then I have to buy for us to feed on... With the soya beans, we do not consume it but rather sell it to those who sell soya kebab. The water melon, I farm it purposely for money. The groundnut too, it is for commercial reasons because we farm it a large quantity. I give some to my wives for groundnut paste and the rest are sold (Aziz) Northern Region, Savulugu/ Nanton, Diare).

The data also suggests that many of the farmers have changed the crops they cultivate within the last few years. As shown in Table 10, about 15% of the farmers reported that they have changed their crops in the last 5 years. The proportion of farmers who have made significant changes of this nature was highest in the greater Accra region (27%) and lowest in the Brong Ahafo and Northern regions (5% and 9% respectively). We had expected that these changes in the crops produced would be largely attributed to environmental changes. However, in both the focus group discussions and the individual interviews, farmers reported that changes in the crops they produce were largely a result of changes in the marketability and profitability of the various crops.

Table 10: Percentage distribution of farmers who have ever changed their crop within the last 5 years

Changes in crop produced	Region				All farmers (N=400)
	Greater Accra	Eastern	Brong Ahafo	Northern	
Crops produced changed within last 5 years	27	18	5	9	14.75
Crops produced have not changed within last 5 years	73	82	95	91	85.25
Total	100	100	100	100	100
Pearson chi square = 22.9634 P-value = 0.000					

In the greater Accra and Eastern regions where a significant number of farmers reported changes in the crops they cultivate, many of the farmers indicated that they have shifted from the cultivation of cassava because it is no longer marketable. This came out clearly during the focus group discussions in the Ada West district in the Greater Accra region:

“About 20 years ago, cassava was the most important staple crop being produced here but now it is relatively in extinct because there is no market for it” (Azinah, Female Focus group participant, Ada, Greater Accra)

“Those days when you come to this community, gari was something every household produced. Even if you are passing by the road side you would see gari displayed in large quantities by the road side.... In those days we were not cultivating water melon in large quantities but because there was no market for the cassava we stopped producing it on commercial basis, and we introduced the cultivation of watermelon in larger quantities now” (Gladys, Ada West, Greater Accra, Focus group participant)

In northern Ghana, however, some farmers reported that crops failure as a result of low rainfall and declining soil quality has influenced them to stop the cultivation of yam and guinea corn:

My father used to cultivate yam and guinea corn. We do not cultivate them anymore. The soil cannot support them. Also, there is a change in the rainfall pattern. The rains no longer fall as before. We are discouraged from farming the two crops because we do not have adequate rains for their cultivation” (Aziz - Northern Savulugu/ Nanton, Diare)

The implication of these findings is that any support for smallholder farmers must target the crops that have ready markets. Given that the crops that have ready markets are vegetables which are also perishable, it will be useful to link farmers to food processing firms. There is also a need to help farmers to get access to markets outside Ghana. Also, there is the need to deal with market access to prevent local foods being substituted with cheap foreign imports.

4.4. Land Acquisition, Farm Inputs and Agricultural Mechanisation

A significant proportion of households in all the regions acquired farming land through inheritance and short-term lease while a minority of farmers acquire land through share cropping and outright purchase (see appendix). Short-term lease/hire was the dominant land acquisition system in the Brong Ahafo region (78.46%), Eastern region (75.71%), and Greater Accra (53.71%). However, in the Northern Region, the dominant form of land acquisition was rather inheritance (81.69%), while short-term hire took the second place (18.31%). Inheritance was the second most important type of land acquisition in the greater Accra region (46.3%); Brong Ahafo region (18.85%) and Eastern region (18.2%). Although outright purchase was very uncommon in all the regions, the proportion of farmers who acquired land through this system was highest in the Brong Ahafo region (1.92%) where such lands were mainly used for fruit crops (see Appendix). Similarly, although share-cropping was uncommon, the proportion that acquired land through this system was highest in the Eastern region (5.36%). Short-term hire was more likely to be used for the cultivation of crops that can be harvested after a few months of planting (e.g. maize and vegetables). In some situations, the same farmer may use different systems of land acquisition for different crops. As captured in the statement below, for instance, some farmers reported that they use their own lands for the cultivation of food crops consumed by the household, while hiring land for the cultivation of vegetables: *“I rent land for all my vegetable production. I pay Ghc 150.00 per acre for 6 months. However, all my food crop farms are on family lands”* (Josh, Begoro).

Consistent with the findings of our recent large-scale study on farm inputs, the seed industry in all the communities studied is largely traditional, with a majority of farmers obtaining seeds and other planting materials from their own harvest or other farmers. In our recent study, about 53% of the farmers reported that, during the last planting season, they obtained seeds and other planting materials from their own harvest, while another 18.8% of farmers obtained seeds and planting materials from other farmers. Only 20.3% and 5.9% of farmers respectively bought their seeds and other planting materials from agrochemical shops and seed companies. In that study it was found that the source of seeds and other planting materials vary from one crop to another. Agro dealer is the major source of seed for pepper (46.9%) and rice (42.9%) (Yaro and Teye 2017). Fertilizer application in both the current and the previous study was quite low, only 59% of the farmers interviewed were applying fertilizer on their farms. The quantity of fertilizers applied by small scale farmers is much lower than that applied by large scale farmers. Farmers in the coastal savannah and northern savannah were more likely to use fertilizers than those in the forest zones. A majority of the farmers (91.2%) obtained fertilizer from private agro dealer shops or the local market (See Yaro and Teye, 2017).

Data from the current study shows that about 59.5% of the farmers use machinery, mainly in the form of tractors and ploughs. As shown in Table 11, the proportion of farmers who adopt a form of mechanisation was higher in the savannah zones (i.e. 99% for Greater Accra and 96% for Northern Region) than the forest zones. These differences are significant ($X^2 = 274.2446$, $P=0.000$). The difference may be explained by the open nature of the grassland versus the closed forest which requires lots of investments in clearance in order to use tractors. Also, the nature of the soils with fewer or no rocky outcrops makes the savannah amenable to mechanisation. This finding implies that any huge investment in the use of mechanisation must target farmers in the savannah zones. There was no significant gendered difference in the use of farm mechanisation ($X^2 = 0.0082$; $P\text{-value} = 0.928$).

Table 11: Percentage distribution of farmers who use some form of Mechanization on farm

Indicator	Region				All farmers (N=400)
	Greater Accra	Eastern	Brong Ahafo	Northern	
Use mechanization	99	0	43	96	59.5
Do not use mechanization	1	100	57	4	40.5
Total	100	100	100	100	100

Pearson $\chi^2(3) = 278.2446$ $P\text{-value} = 0.000$

The types of machines used on the farms vary across different regions. As shown in Table 12 although tractors and ploughs are the most commonly used types of machinery in all the regions,

the few people who used combine harvesters, thrashers and harrows were mainly in the northern savannah region where rice is largely produced. This means that any effort to support farmers to improve farm mechanisation must consider the equipment required for various regions. People in the northern savannah need more varieties of farm machinery than those in other regions.

In terms of ownership of the machinery used, the data shows that a majority of farmers do not own machines and have therefore been renting from private businessmen. As shown in the Table 13, only 5.6% of those who reportedly used tractors own this type of machinery. The proportion of tractor users who own their own machines was highest (12.2%) in the Brong Ahafo region.

Table 12: Percentage Usage of Farm Machinery by Region

Indicator	Greater Accra			Brong Ahafo			Northern		
	Users	Non-users	Total	Users	Non-users	Total	Users	Non-users	Total
Tractor	99	1	100	41	59	100	95	5	100
Plough	99	1	100	25	75	100	46	54	100
Combine Harvester	0	100	100	2	98	100	9	91	100
Thrasher	0	100	100	1	99	100	47	53	100
Harrow	1	99	100	0	100	100	7	93	100
Planter	0	100	100	0	100	100	0	100	100
	0	100	100	0	100	100	0	100	100

Table 13: Ownership of Farm Machinery

Indicator	Greater Accra			Brong Ahafo			Northern			Overall		
	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total	Own	Rent	Total
Tractor	4	94	98	5	36	41	4	91	95	13	221	234
%	4.08	95.92	100	12.2	87.8	100	4.2	95.79	100	5.6	94.4	100
Plough	4	93	97	6	19	25	3	43	46	13	155	168
%	4.12	95.88	100	24	76	100	6.5	93.5	100	7.7	92.3	100.0
Combine Harvester	0	0	0	1	1	2	1	8	9	2	9	11
%	0.0	0.0	0.0	50	50	100	11.1	88.9	100	18.2	81.8	100.0
Thrasher	0	0	0	0	1	1	1	46	47	1	47	48
%	0.0	0.0	0.0	0.0	100	100	2.1	97.9	100	2.1	97.9	100.0
Harrow	1	0	0	0.0	0	0	2	5	7	3	5	8
%	100	0.0	0.0	0.0	0.0	0.0	28.6	71.4	100	37.5	62.5	100.0
Planter	0	0	1	0	0	0	0	0	0	0	0	0
%	0.0	0.0	100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	9	187	196	12	57	69	11	193	204	32	437	469
	4.6	95.4	100.0	17.4	82.6	100.0	5.4	94.6	100.0	6.8	93.2	100.0

Similarly, only 7.7 % of the respondents who use the plough own one while the rest rent them. Once again, the proportion of plough users who own their own machines were found to be highest in the Brong Ahafo region (24%). This may be explained by the fact that farmers in the more favourable ecological zones of Ghana are generally richer because of the wide variety of export cash crops such as cocoa and cashew, which have guaranteed prices. As will be discussed later, the rental of machinery from private persons is a challenge that farmers face.

4.5. Support to farmers

The study shows that all the categories of smallholder farmers received very little support from both government and NGOs. As shown in Table 14, government support to farmers was largely in the form of extension services, which 31% of the farmers benefited from. This was followed by training on the use of fertilizers and chemicals, which ever benefited 29% of the farmers in all the four regions. Financial assistance or loan benefited only 13.8% of the farmers. There were significant variations in the nature of support and region of residence. Farmers in greater Accra region which, is more urbanised with various financial institutions, were more likely to have received financial assistance than their counterparts in other regions. However, farmers in the Eastern region and Brong Ahafo regions where cocoa is grown generally received more support than those in other regions. The data therefore shows that government support to the agricultural sector still focuses in regions that cultivate cash/export crops.

Table 14: Percentage distribution of farmers who received support from government by type of support and region

Type of support	Greater Accra	Eastern	Brong Ahafo	Northern	Total (N=400)
Financial assistance/ Loan	34	18	1	2	13.8
General Extension services	7	64	46	7	31.0
Training on pests and disease control	6	65	37	7	28.8
Training on marketing	1	46	17	5	17.3
Training on preservation of seeds	2	48	21	6	19.3
Training on use of fertilizers and chemicals	4	66	39	7	29.0
Post-harvest management training	2	69	30	8	27.3
Quality control and traceability	2	85	20	6	28.3

4.5.1 Support under Planting for Food Programme

As explained in the introductory section, the Planting for Food and Jobs Programme, which is a flagship programme introduced by the current government, aimed at increasing crop production for consumption and for industry. Therefore, we had expected more farmers to benefit from this programme. As shown in Table 15, only 17.75% of the farmers interviewed have reportedly benefited from the Planting for Food and Job programme. While the descriptive statistics show that the proportion of farmers who have benefited from this programme was relatively higher in the northern region (20%) followed by the Eastern and Brong Ahafo (19% each) and lowest in the greater Accra region (13%), the chi square test showed that these differences are not statistically significant ($X^2 = 2.1063$ P-value = 0.551).

Table 15: Percentage distribution of farmers who have received support under the Planting for Food and Job Programme by region

Indicator	Region				All Farmers (N=400)
	Greater Accra	Eastern	Brong Ahafo	Northern	
Support received	13	19	19	20	17.75
No support received	87	81	81	80	82.25
Total	100	100	100	100	100
Pearson chi2(3) = 2.1063 P-value = 0.551					

However, the chi square test shows that are significant gendered variations in propensity to benefit from this programme (Table 16). The proportion of respondents who benefited from this programme is higher among male farmers (21.94%) than female farmers (8.2%). These differences are statistically significant ($X^2 = 10.9735$ Pr = 0.001). This situation whereby programmes designed for the agriculture sector discriminate against women is not new and it is a result of the wrong assumption among policy implementers that farming is a ‘male activity’. The organisation of agricultural funding and extension programmes along male lines is problematic as it is likely to worsen already existing gender inequalities in Ghana.

Table 16: Gender distribution of farmers who received support under the planting for food and job programme

Gender	Received support	No support received	Total
Male	61 21.94%	217 78.06%	278 100%
Female	10 8.2%	112 91.8%	122 100%
Total	71 17.75%	329 82.25%	400 100%

Pearson chi2(1) = 10.9735 Pr = 0.001

Most of the farmers who benefited from the Planting for Food and Jobs Programme stated that they received farm inputs in the form of fertilizers. In each of the regions, almost all the farmers that benefited from the flagship programme received fertilisers. A few of them also received extension services and agro chemicals. Again, farmers in the Eastern and Brong Ahafo regions were more likely to receive these inputs. The support under this flagship programme is limited to input subsidies with almost nothing on marketing.

Table 17: Type of support received by farmers under planting for Food and jobs programme

Type of Support	Greater Accra		Eastern		Brong Ahafo		Northern	
	Frequency	Percentage	Frequency	Percentage	Freq	Percentage	Freq	Percentage
Seeds	0	0	15	15	7	7	2	2
Fertilizer	13	13	19	19	19	19	18	18
Agrochemicals (for fall army worm)	0	0	2	2	0	0	3	3
Extension	1	1	11	11	2	2	1	1
Marketing	1	1	0	0	0	0	0	0

The farmers in our study generally believe that the planting for food and jobs programme is good but they also have some misgivings about how certain aspects of the project is being implemented. As shown in the statement below, some of the farmers complained that the quality of the seeds and fertilisers provided was lower than what they normally buy from the market and therefore suggested that the policy implementers should ask farmers to indicate the types of input they want:

“I participated in the planting for food and job programme. They supplied us with subsidised fertilizer and seeds. I am not satisfied with the program because the prices of key agro inputs are not subsidized. Also, some of the fertilizers supplied do not serve their purpose when used (Yaw, Begoro.)

“I am not satisfied with the PFJ vegetable seeds. At least they should ask what we want before they supply it through the Agric. Officers. We don’t want to experiment any seed” (Salla, Bosuso)

“I am part of it. I received fertilizer at a price of GHC 58. I did not take the seeds because the Agric. The seeds take much time to germinate (Vitus, Nankuma, and Nkoransa South- Nankuma)

An agricultural extension officer interviewed in the eastern region reported that they have received such complaints about the low quality of subsidized inputs:

“A farmer informed me that he took a number of bags of the PFJ fertilizer and realized is not good compared to the market products, so he abandoned them on his farm. He asked me to find someone to come for them.” (John, an Agric. Extension Officer, Fanteakwa South-Begoro)

“I have taken the fertilizer this year. The program is a good one.... The programme is good but we would appreciate if the government could give out a tractor to plough our lands as part of the programme (Focus Group participant, Akumssa Dumase)

Some farmers also complained about the terms of payment. One farmer argued that they were initially told that they could pay back in cash or with their farm produce. However, when it got to the time to pay back, they were asked to pay back only in cash and this was a challenge to them:

“I don’t like the recent development on the programme. We were told to either pay back with our farm produce or cash but now Government is saying only cash” (Seku, Bosuso)

It appears that the inability to take produce from the farmers was related to inability to link the programme to marketing which is the very challenge that many farmers are facing. As shown in the quotation below, some farmers wanted the programme to be linked to marketing: *“The program is good, but we wish the government would create a stable market and standard prices for our produce (Focus group participant, Fanteakwa South-Begoro).* Despite these concerns, some of the farmers were happy with the programme and were requesting for more support under it.

4.6. Challenges Faced by farmers

In order to make recommendations to enhance agricultural productivity, farmers in our study were asked specific questions on the challenges that they face in farming in general and those that relate to various components of the agricultural system. The quantitative results (see appendix) indicates that the common challenges include lack of access to credit and insurance; low access and poor quality and access to inputs; high cost of land; farm mechanisation challenges; inadequate extension services; pest and disease infection; post-harvest loses; marketing challenges; lack of storage facilities and transportation challenges. The challenges are discussed in the presentations that follow.

4.6.1 Lack of Access to credit and insurance

Access to credit is one of the major challenges cited by farmers. Indeed, about 256 out of the 400 farmers mentioned this as their topmost constraint (see appendix) and this is understandable given the fact that adequate finance can help deal with some of the other challenges. As discussed already, only about 14% of the farmers have reportedly benefited from some form of government financial support. The farmers also reported that they are unable to receive loans from the private sector because they lack collateral security. In recent years, some micro finance organisations have emerged, but farmers still find it difficult to access such loans. Some of the farmers also noted that obtaining loans from micro finance institutions is unfavourable to them because of high interest rates. In the absence to state financial support, farmers sometimes borrow from friends and wealthy people in the community but the interest rates are very high, as some charge 100% for a loan for about 3 months:

“Some of the problems are inadequate funds. It becomes difficult getting money to finance farming activities and funds are sometimes borrowed from friends or relatives, which is paid at a later date... We can also borrow from those who have money in this community but we pay so much. Sometimes we pay double the amount borrowed during the harvesting season”

The farmers explained that the lack of access to credit, especially during the planting season makes it is difficult for them to buy useful inputs, as shown in the statements below:

“Access to farm inputs is really a challenge especially at the start of the farming season due to lack of finance” (Mercy, Nkoransa South-Nankuma, Maize, Groundnut, and Cassava)

“We have agro-chemical shops where we can purchase farm input but capital especially at the start of the season is the biggest challenge” (Madam Serwaa Comfort, Akumssa Dumase, Maize, Cassava Groundnut)

Related to the challenges associated with accessing credit is lack of insurance schemes, which was cited by a few farmers. Despite discussions on the need to develop insurance schemes for farmers, these programmes are not popular as the main insurance companies see farming as a risky venture.

4.6.2 Low Access and Poor Quality of Inputs

A significant proportion of farmers also reported that they find it difficult to access high quality farming inputs, such as planting materials, fertilizers and agrochemicals. In an earlier study, only 60% of farmers surveyed reported that they have access to seeds always while only 47% have access to fertilizer always (Yaro and Teye, 2017). With regards to high quality seeds, lack of money to buy good quality seeds was the most serious challenge, followed by lack of storage facilities to store one’s harvested seeds and high cost of seeds. Other problems cited as barriers to accessing good quality seeds include unavailability of preferred seeds and poor quality of seeds.

A significant proportion of respondents also complained about inability to buy fertilizers. As highlighted in our previous report, the change from the previous system of fertilizer distribution to the new electronic system has presented many challenges to the farmers. The distance from communities to the town centres where fertilizers are sold or distributed also restricts access to fertilizers. Late ‘arrival’ of the subsidized fertilizer also creates serious challenges to farmers. These concerns are captured in the statements below:

“Governments subsidized fertilizer doesn’t come on time which forces some of us to go and purchase fertilizers elsewhere at a higher cost so that we can be in line with the season. Those who cannot afford to purchase the fertilizer are forced to fold up from business”. (Mr B) Ada, Grater Accra.

“Input accessibility is really difficult especially at the start of the farming season due to inadequate working capital (Yaw, Begoro,)

“We buy most of our farm inputs from the market. This year Government subsidized fertilizer. However, it came late after we bought some from the market” (John, Fanteakwa South-Begoro)

“Farm inputs are very expensive to access, especially the vegetable seeds. Few inputs have been subsidised for us and we don’t really see the effectiveness of those subsidised inputs” (Josh Begoro, plantain, pepper and tomatoes)

Some farmers also explained that the high cost of fertiliser prevents them from applying the correct quantity. Others reported that they sometimes fail to apply fertilizers, as indicated below:

“I bear the full cost of the input used in my farm. I sometimes fail to apply as recommended due to financial challenges (Seku, Bosuso)

“I have cut down the size of my farm from 5 acres to 2 acres because of input cost. Access to credit to buy inputs is always a challenge to us at the start of the farming season (Focus Group participant, Akumssa Dumase)

“Farm inputs are available at this area but financial constraints limit its accessibility, hence we can’t conform to input standard usage (Asamoah, Begoro)

Similarly, although a majority of farmers interviewed were applying agrochemicals on their farms during the time of the study, they also generally complained about high cost of agro-chemicals needed to control weeds, pests and diseases. The inability of farmers to get adequate supply of farm inputs is generally a result of low government support. While national seed and fertilizer

systems in most parts of Ghana's history were controlled and funded by the state, the current policies emphasized greater private sector participation in the production and distribution of seeds and fertilizers. As we have argued elsewhere, although the emphasis on increased role of the private sector in itself is not bad, government must still implement smart subsidy programmes so that people who cannot afford fertilizers are still supported. There has also been a focus on the development of inorganic fertilizers. It is only in 2016 that the Government included the organic fertilizer produced by Accra Compost for the 2016 subsidy programme to boost their interest. Farmers in many rural areas can be assisted to produce and use organic fertilizers within their localities (See Yaro and Teye, 2017).

4.6.2 Environmental changes

Our findings are consistent with the results of earlier studies which have noted the negative effects of environmental changes, especially unreliable rainfall on agricultural production in Ghana (Yaro, 2013; Teye et al, 2015). The main forms of environmental change identified by farmers is delays in the onset of rains, declining rainfall, fluctuations in the amount of rainfall and increased temperatures which sometimes leads to crop failure and post-harvest losses. Crop failure associated with climate change has also negatively affected food security. Other forms of environmental change mentioned include reduction in soil quality which is a result of over-cultivation. The views of farmers on environmental challenges are indicated in Box 2.

Box 2: Farmers views on environmental change

“In terms of our farming activities, our main challenge here is the rain. Sometimes the rain may come at the time we didn't expect it to come. Either it comes very early or very late. So, you will realize that all our preparations will go waste (Focus group discussion participant, Northern Region, Savulugu/ Nanton, Diare)

"At times the rains come early and delays at times too. When it delays, we really incur a great cost/loss because by that time seedlings have been planted already" (Eno, Greater Accra region)

“The rainfall pattern is a major problem. Its uncertain pattern seriously affects our farming activities (Josh, Begoro,)

“Right now, the land has lost its fertility. The whole area is now turning into grassland. Rainfall pattern has also changed, with long period of dry seasons (focus group participant, Fanteakwa-Bosuso)

“Our land is gradually losing its fertility. Fertilizer usage is our remedy now” (Vitus, Nkoransa South-Nankuma)

In discussing the environmental challenges, some of the farmers also mentioned that absence of irrigation facilities compound these problems. Some farmers explained that they sometimes depend on their own dugouts, but these are not effective in some places. The provision of small scale irrigation schemes will certainly help farmers do all year-round farming.

4.6.3 High Cost of farming land

The high cost of farming land was a major challenge confronting farmers, especially in the greater Accra, Eastern and Brong Ahafo regions, where a significant proportion of farmers hire land for farming. The cost of renting a land slightly varies from one region to another but there are similarities. The cost of land generally varies from GHC 80 per acre in the Northern Region to GH 150 per acre in the Eastern region, but these costs depend on what the farmers want to use the land for. In the Brong Ahafo, Eastern and Greater Accra regions where a significant proportion of farmers rent land, the cost is highest when the land is to be used for vegetable farming than when it is to be used for the production of other less profitable crops: “*Land owners charge based on what the farmer decides to use the land for. The rent for vegetable production is higher than food crop production*” (Salla, Bosuso). As indicated in the statements in Box 3, farmers see the price of land and the fact that they are sometimes expected to make advance payments as a serious challenge:

Box 3: Farmer’s views about land

“Lands are leased to us and most land owners ask us to make advance payment for about 6 years and if your unable to meet such demand then you are out of business” (Mr. B) Ada, Grater Accra)

“I rent the farming land. The price is not favourable to me.... Well if the land owner is good, you could get it at GHC 80.00 per acre otherwise it is mostly GHC 100 per acre per year (Elijah, Nkoransa South-Nankuma)

“Most of us here are migrant farmers so we rent the land but it is expensive. Land owners perceive vegetable cultivation as cash crop due to its short time maturity hence charge high prices for land. The cost is between Ghc 120 -Ghc 150 per acre for 5-6 months. (Focus group, Fanteakwa South-Begoro,

“There is a high cost of land rentals. We pay GHc 150.00 for five months per acre. Because vegetables are seen as cash crop here, we pay more for land for vegetable farming (Yaw, Begoro,)

As for the land issues, we are doomed because if you don’t have money you can’t rent it. (Vitus, Nkoransa South-Nankuma)

Different categories of farmers face different challenges in assessing land. It came out in the discussions in the Greater Accra and Northern Regions, which are patrilineal societies, that women face more challenges in assessing land because of patriarchal inheritance systems. Also, in the Brong Ahafo and Eastern regions, poor migrants face more challenges in assessing land as they need to rent all their farming lands. Apart from the high price of land, the short-term rental arrangements affect farmers' desire to investment in the land. Similar to cases cited by Teye and Owusu (2015), some farmers reported that the fact that they have short term tenancy agreement does not encourage them to invest into the development of the land (e.g. digging of wells and dugouts for farming):

"I rent half and also use my personal land. Sometimes you will spend your entire time cultivating the land for the land lord to show up that his relative just came and would like to use the land for farming too. This tends to be a bit problematic considering your farming plans" (Mr C) Ada Garter Accra Tomatoes, Perper. Watermelon).

4.6.3 Challenges of farm mechanisation

Farmers in the coastal savannah and northern savannah zones, in particular, reported of unavailability and or high cost of tractors and ploughs as a major challenge to production. In some of the communities, especially in northern Ghana, the major problem is the lack of tractors, ploughs and combined harvesters. The statements below highlight these problems.

"Our main challenge is tractors. During the farming season, we don't have tractors to plough our farmlands" (Aziz) - Northern Region, Savulugu/ Nanton, Diare

"It is always difficult for me to get tractor to plough for me, fertilizer too is an issue, I do not get fertilizer to apply" (Male farmer) - Northern Region, Savulugu/ Nanton, Diare

"It is not easy to get tractor to plough the land and the rain too is not favouring us. There are combine harvesters for rice, soya beans but we do not get them (Alhassan) - Northern Region, Savulugu/ Nanton, Diare

Another challenge to the use of farm machinery is the high cost of renting tractors and ploughs. In the Greater Accra region, for instance, farmers reported that the amount ~~that~~ they pay to rent a plough is the same as the amount they pay for the land. This, according to farmers, is too expensive and affect their ability to use farm machinery. Farmers in the Eastern region made similar complaints:

“The amount the plough will charge is the same amount we pay for the land. So currently we are paying GHC90 for the ploughing and at the same time, paying GHC90 for the land. We have to pay cash up front.” (Focus group participant, Greater Accra)

“I once rented a tractor for a watermelon farm. The cost was high (i.e. GHc 100.00 per acre) (Yaw, Begoro,)

4.6.4 Inadequate Extension Services, Pest and Disease Infection and Post-Harvest Losses

The farmers also generally complained about inadequate extension services in their communities. As noted already, the extension services were largely directed towards the cocoa growing areas and as such farmers in the rural and remote communities in the northern regions as well as those in Greater Accra region received very little extension services. Given that general extension services not sufficient, most of the farmers complained that they have not received training on use of fertilizers and chemicals, management of pests and diseases and post-harvest losses which were also reported as a major challenge. Some farmers reported that diseases and pests have led to total crop failure in some years. The post-harvest losses vary from one crop to another (see Appendix). The proportion of post-harvest losses is highest for perishable crops, including tomato. Some farmers reported that they can lose as high as 70% of the farm produce when there are no markets. The farmers’ experience post-harvest losses in the production of cereal crops but that is moderate. The statements below highlight the nature of these losses.

“It depends, most at time about [water melon] 70% gets spoilt. We have no other option than to bury the spoilt farm produce”

“We experience huge loss especially when there is abundance. For every 10 bunches of plantain I lose 3- 4 bunches. For tomatoes, almost half of say 10 boxes gets spoiled. It is difficult for us to salvage this situation. The government should help us with good roads (Josh, Begoro,)

“I lose ½ bag in every 10bags of maize I harvest. Every 5 bags of pepper ½ bag will spoil. Every 5 boxes of tomatoes, 1 box spoils. (Asamoah, Begoro,)

“The okra goes bad after 3 days causing lots of losses (about ½ a bag of every 3 bags). Losses in maize is moderate. (Salla, Bosuso,)

“In 2005, I left my whole tomatoes farm unharvest because there was no market. What we do best sometimes is to reduce the price drastically and sell it off. (Josh, Fanteakwa South-Begoro)”

Many farmers noted that such post-harvest losses discourage them from investing heavily into farming. Other farmers reported that post-harvest losses can make farmers who borrow money for farming become even poorer.

4.6.5 Marketing challenges and Storage challenges

It is clear from the discussions above that the post-harvest losses are largely a result of lack of ready market and storage challenges. Unsurprisingly, many of the farmers interviewed mentioned access to market as a major challenge in agriculture. The various marketing challenges mentioned by the farmers (see Table 18) include lack of access to the market, which was generally ranked as the most serious challenge.

Table 18: Farmers ranking of marketing constraints facing them

Indicator	Rank							Total
	1	2	3	4	5	6	7	
Lack of market access	260	59	14	27	22	5	13	400
	65	14.75	3.5	6.75	5.5	1.25	3.25	100
Low prices of food products	42	262	58	18	11	6	3	400
	10.5	65.5	14.5	4.5	2.75	1.5	0.75	100
Bad Transport network	14	15	179	52	35	45	60	400
	3.5	3.75	44.8	13	8.75	11.25	15	100
Lack of storage facilities	13	23	43	182	51	47	41	400
	3.25	5.75	10.8	45.5	12.75	11.75	10.3	100
Post-harvest losses	33	19	27	40	177	53	51	400
	8.25	4.75	6.75	10	44.25	13.25	12.8	100
High cost of transport	8	8	29	29	53	204	69	400
	2	2	7.25	7.25	13.25	51	17.3	100
Lack of standards and weighing	30	14	50	52	51	40	163	400
	7.5	3.5	12.5	13	12.75	10	40.8	100

Lack of access to market commonly occur in rural farming areas during certain seasons where the farmers cannot sell their crops because market women who go there periodically to buy agricultural products do not visit those farm gates. In Ada West district, there are occasions when the market women visit the community, but they cannot buy all the commodities and as such some of the farmers cannot sell their produce. Farmers indicated that in the absence of many marketing options, they are forced to accept any price offered them by the traders who visit these villages. These challenges are more serious for farmers who produce perishable crops. This problem was more pronounced in the Ada West area where there are no markets.

These concerns are highlighted below:

"It is very terrible when you harvest and there is no market for it. You will just watch your tomatoes get rotten in the farm. Some customers too will promise to pay certain prices but right after harvesting, they tend to change their mind and revise their prices downwards. As at that time

you had already harvested so you have no option than to give it at their prices" (Jane) Ada, Greater Accra)

"The price is not always good for us. It is not always as we expect. From the beginning of November and December, the price does not just favour us at all. As I speak now, just this past market day, I was going to buy fuel for a car to go and convey my farm produce, and market women were buying maize at GHC80.00. But after that price quote, another batch of traders also followed and offered GHC90.00. Then I called Tamale and they told me it was GHC100.00. In that case it is not fine with us. You see, there is difference in the prices among the three people". (Focus group discussion - Northern Region, Savulugu/ Nanton, Diare)

"I am and I am not happy. We have no choice than to sell to them. The traders come to this community to buy our goods at low prices and go to sell them and get much profit than we the farmers. We do not like it but it is like we are forced to. We wish we could be selling our produce to buyers who will not cheat us. Some organizations buy these goods and for them, they do not cheat they buy them at good prices. When we sell to them we get profit than selling to the petty traders" (Aziz Northern Region, Savulugu/ Nanton, Diare)

"One problem with the tomatoes is that sometimes you don't have any say in pricing the product. You may have agreed on certain price with a customer say GHC50 per box and he will agree for you to harvest and be waiting patiently for him/her to only come to tell you s/he will offer GHC30 per box. As at that time you have no option than to let him/her pick it or else it will go bad" ((Matilda, Ada Greater Accra)

Some farmers believe that the market women who come to their communities to buy farm produce cheat them because there is too much farm produce and only a few market women. In the Ada area, farmers feel that the women sometimes connive with middle men locally known as "agenda boys" to cheat farmers by offering very low prices once the local boys inform them that many people have plenty farm produce. These complaints are highlighted in Box 4.4.

Box 4: Farmers perception on market women cheating

"The buyers are complete cheaters. So, it will be good if the government steps into buying the produce or brings a standard price like they do in cocoa (Salia, Fanteakwa South-Begoro)

Traders cheat a lot when they buy from your farm gate. E.g. when plantain is scarce in supply, the price of a plantain say 20 bunches goes for Ghc 20.00 at the farm gate and it is sold at Ghc60 (Seku, Bosuso, ER - Maize, Cassava, And Plantain)

"They cheat us a lot in terms of the price of our produce (Vitus, Nankuma, Nkoransa South- Nankuma, BA- Yam, Maize, Cassava, Groundnut, Beans)

"What can you do, they do cheat us in price, but we can't complain because there is no market competition (Mercy, Nkoransa South-Nankuma, BA)

"Am never happy with them unless a season like June, July where we control the price. If you are not satisfied with them we keep and sell later. Am never happy with them. The price is not good. The bag they use in the farm is too big. (Focus group, Akumssa Dumase, BA - Watermelon, Tomato, Pepper, Mango (the big ones) and food crops (cassava and plantain)

"We are always cheated, most customers know very well about the perishability of the crops and call for a bad bargaining power, most of the time they win." (Mr B) Ada, Greater Accra

"We have these intermediaries called "Agenda boys" and they exploit us to our potential customers a lot. It is a big problem to us as far as sales and Profits are concerned" (Mr Kolue, Ada, Greater Accra – (Watermelon, pepper and tomatoes)

"We are always cheated, most customers knew very well about the perishability of the crops and call for a bad bargaining power, most of the time they win."

"Sometimes we have some misunderstanding with them in that they come to pick the items and defer payments after sales but they tend to default. When they come next and you ask them, they will tell you even the items got rotten so they have nothing to pay. This happens to be very common among some customers which brings misunderstanding. And all this is because we don't get ready market for the items. And also, we don't have written contract with them to take them on. This could be that because we don't have an association. If we have things like factories to process our produce when there is no market, we will be very happy" (Teye, Ada Greater Accra)

Some of the farmers also attributed the challenges they face in selling their produce to poor transportation network and lack of storage and processing facilities which force them to sell at low prices. Some farmers also complain about lack of standards in weighing.

4.6.6 Transportation Challenges

The farmers also explained how transportation challenges affect their agricultural activities, especially when transporting their farm produce to the market. As shown in Table 19, across all

the regions, the most common challenge was high cost of transportation, which was mentioned by 47.5% of the 400 respondents. When differentiated by regions, the proportion of farmers who mentioned this challenge were highest in the Northern Region (63%), followed by Eastern region (55%), and lowest in Greater Accra region (25%). The second transport related problem was poor road from farm gate or community to market which was indicated by 45 percent of respondents. The proportion of farmers citing this as a challenge were highest in Eastern Region (60%), followed by Brong Ahafo region (53%) and the Greater Accra region (49%) and Northern Region (19%). While Northern Region is the least developed, the low rainfall over there means that the poor roads are motor able during the rainy season. In contrast, roads in the other communities are not usable in the rainy season. Other transportation challenges that affect farmers include, long distance to market, unreliable roads, and unavailability of or poor roads from farm gate to community.

Table 19: Problems faced by farmers during transportation of their produce

	Greater Accra		Eastern		Brong Ahafo		Northern		Overall (400)	
	N	%	N	%	N	%	N	%	N	%
No roads or poor roads from farm gate to community	13	13	5	5	13	13	74	74	105	26.25
Poor road from farm gate or community to market	49	49	60	60	53	53	19	19	181	45.25
Unreliability of roads	24	24	14	14	18	18	11	11	67	16.75
High cost of transport	25	25	55	55	47	47	63	63	190	47.5
Long distance to market	29	29	28	28	36	36	56	56	149	37.25
Others	34	34	29	29	29	29	11	11	103	25.75

4.7 Opportunities

Despite the challenges discussed above, there are certain opportunities that can be leveraged upon by policy makers, NGOs and the private sector to enhance agricultural productivity. To begin with, Ghana has vast fertile lands which can naturally support the cultivation of many crop varieties for local consumption and to feed industries. The differences in climatic conditions mean that huge crop diversity can be supported by the four major ecological zones.

Another opportunity is the large population in rural areas where farming takes place. Indeed, about 50 percent of the population live in rural areas where agriculture is the major economic activity. Therefore, labour supply for farming activities may not be a serious problem, once there are funds to pay the workers. The wage levels in the rural communities are also very low and that means labour cost is not very high. Opportunities for farm mechanisation also exist in many rural areas in Ghana. Unlike certain countries where the terrain is not favourable for the use of farm mechanisation, many parts of Ghana are relatively flat.

Finally, despite the complaints about declining prices, a majority of farmers believe that profitability of farming has either somewhat improved or improved significantly as shown in Table 20. Indeed, about 40% of the farmers believed that profitability has improved significantly or somewhat improved in the last 5 years and this means many people are likely to remain in farming. Increasing urban population has increased demand for food and even better exotic foods such as vegetables and fruits.

Table 20: Percentage of farmers who perceived improved profitability by region and crop

Crop Type and Region																		
Indicator	Greater Accra				Eastern				Brong Ahafo					Northern				Tot
	RTS	VG	FT	TL	RTS	CL	VG	TL	RTS	CL	VG	FT	TL	RTS	CL	FT	TL	
Improved significantly	6	34	10	50	24	7	65	96	18	4	14	13	49	0	40	1	41	2
	42.86	20.61	20.83	22.03	25.26	15.22	46.76	34.29	17.82	4.6	34.15	41.94	18.85	0	19.9	20	19.25	24.
Somewhat improved	6	42	5	53	58	24	63	145	50	58	17	14	139	4	99	1	104	4
	42.86	25.45	10.42	23.35	61.05	52.17	45.32	51.79	49.5	66.67	41.46	45.16	53.46	57.14	49.25	20	48.83	
Remained the same	1	23	10	34	12	12	9	33	29	21	10	3	63	0	24	2	26	1
	7.14	13.94	20.83	14.98	12.63	26.09	6.47	11.79	28.71	24.14	24.39	9.68	24.23	0	11.94	40	12.21	15.
Decreased	1	37	13	51	1	2	1	4	4	3	0	0	7	3	28	1	32	
	7.14	22.42	27.08	22.47	1.05	4.35	0.72	1.43	3.96	3.45	0	0	2.69	42.86	13.93	20	15.02	9.
Made losses	0	29	10	39	0	1	1	2	0	1	0	1	2	0	10	0	10	
	0	17.58	20.83	17.18	0	2.17	0.72	0.71	0	1.15	0	3.23	0.77	0	4.98	0	4.69	5.
Total	14	165	48	227	95	46	139	280	101	87	41	31	260	7	201	5	213	9
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1
RTS – Roots & Tuber/Sucker		CL - Cereal/Legume			FT – Fruit			VG – Vegetable			TL- Total			OV - Overall				

CHAPTER 5. DISTRIBUTING FOOD IN GHANA

This chapter explains food distribution in Ghana and the role of different market agents and channels in the distribution process. We also assess the relationship between farmers and market agents, the constraints and the strategies adopted by the market agents to stay in business. Furthermore, we examine the degree of market integration by showing the linkages spatially of different markets and actors, and responsiveness of demand and supply mechanisms. We argue that the main problem of the entire food system hinges on marketing as past government efforts have not dealt with the removal of marketing rigidities faced by farmers which discourages production.

5.1 Actors in the chain of distribution

Food distribution in Ghana is determined by different actors. Fresh or raw produce harvested in the farm passes through exchange activities starting from the farmer through the activities of middlemen and transporters. The activities of middlemen in the food chain process in Ghana include: aggregators, itinerant traders, market queens, retailers and street vendors or hawkers. The final destination for food distribution could either be the farmer's own household, other consumers in the community, within the district or urban centres outside the production communities and even neighbouring countries such as Burkina Faso, Cote d'Ivoire and Togo. The diagram below (Figure 4) is pictorial presentation of the food distribution chain in Ghana.

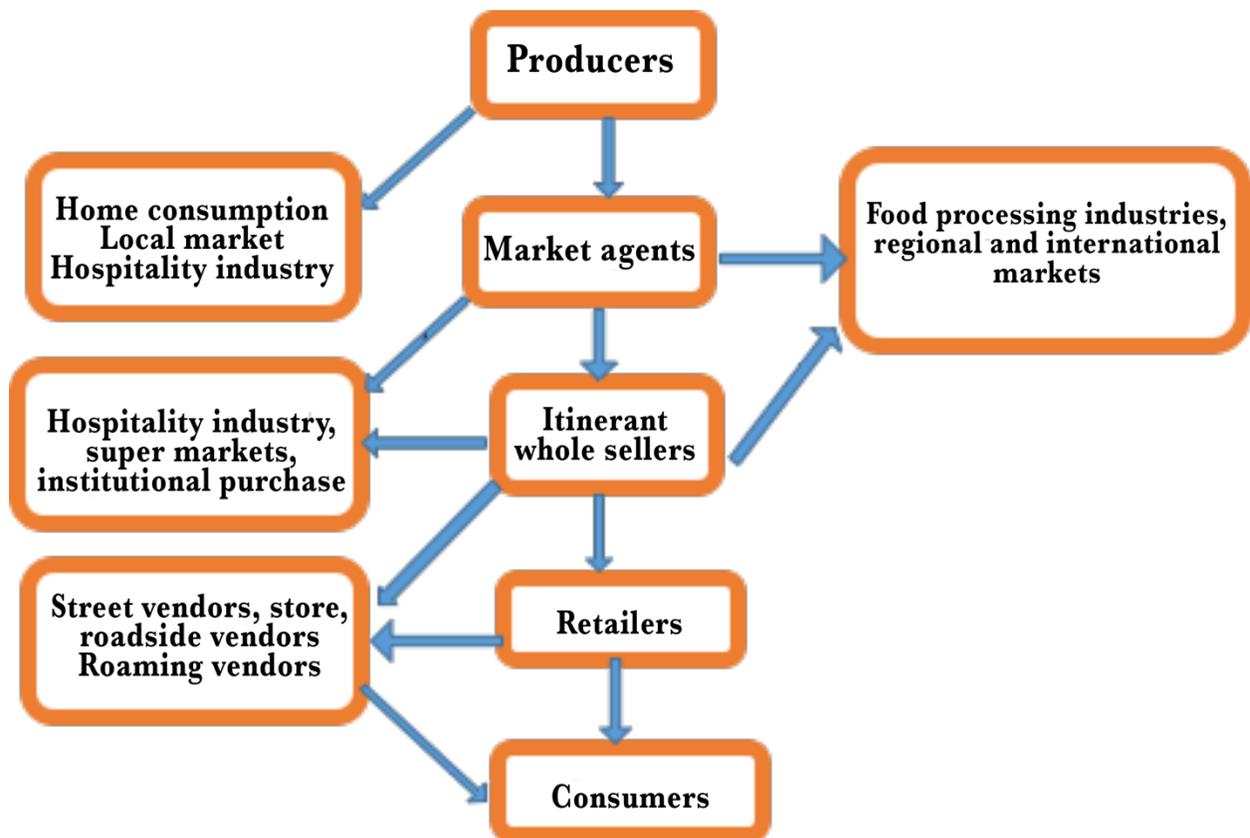


Figure 4: Food distribution chain in Ghana

5.2 Activities of middlemen

Middlemen facilitate the distribution process by purchasing food crops directly from farmers at their farm gates, from aggregators, regular source markets, from periodic markets and supply to other wholesalers and market queens at destination markets. Sometimes they also supply to hotels, restaurants, chop bars, processing companies such as Nestle Ghana, Ghana Brewery Limited and poultry feed processing companies.

Periodic markets: This is a gathering of buyers and sellers of commodities at an appointed place at regular intervals (7 or 6 or 3 days in Ghana) where both economic, social and cultural interactions take place.

Source markets: Source market could be a permanent market or periodic market where produce is purchased for resale in other markets

Destination markets: Destination markets are markets where food items purchased from periodic and source markets are supplied to consumers. Note that Source market could also be Destination market.

5.3 Marketing activities and strategies by middlemen

In the Eastern Region, the periodic market for the two research communities is located in Ahomahomaso community where food items ranging from plantain, tomatoes, maize, and pepper are sold to itinerant traders, aggregators, and wholesalers who travel from Ashaiman, Tema, Koforidua and Agbogloshie markets to transact business. Many farmers are shifting or diversifying from production of cocoyam, maize and even cash crops such as cocoa and oil palm to vegetables and fruits to meet the changing demand for these food crops by consumers from Accra, Koforidua and Tema. The perishable nature of these food items comes with high profit in the form of higher prices during lean season and high risk of perishability when there is bumper harvest.

Plantain, which is one of the major crops transacted in the Ahomahomaso market, is normally brought to the market by farmers or aggregators and sold in bunches to itinerant traders from Ashaiman, Tema or Koforidua market. These traders supply to market queens in Tema, Ashaiman or Koforidua who also supply to other market vendors, retailers, bar operators, restaurants and hotels in the urban areas.

For tomatoes and pepper, itinerant wholesalers and market queens sometimes support farmers to produce them thereby guaranteeing a ready market without fixed contract prices. In such situations, they go to the farms and buy the produce in boxes. Prices there are determined by the traders. One strategy used by traders is to pre-inform farmers to harvest and wait for them to come. After the produce is harvested, they may choose to give any price or sometimes, pretend that there was too much supply in Accra and for that matter, they could not buy from the farmers again. Under such situations, farmers have to persuade them to purchase the harvest at any given prices since they cannot store the produce themselves due to the perishability. This was the words from a farmer in

Begoro *“last year, we were told that buyers will be coming the following day, so we all harvested our tomatoes and waited, they never came until in the afternoon. Having inspected the tomatoes for a while, they all claimed the tomatoes were not nice and will be rejected in Accra. We have to beg them to give us any price to avoid total loss”*.

Another pepper farmer from Ada narrated his experience *“we formed an association, and all agreed on a price of pepper for the women. We warned our members not to sell below that price, but when the women came and we told them, they went to the town and stayed there for three days without buying,; our pepper was spoiling, so some people pass somewhere and begged the women to come and buy, so we all decided to sell it at that lower price”*. On the part of the market women, during bumper season, prices in Accra is normally low and the only way to sustain their businesses is to buy at low prices, and since farmers are normally not ready to accept such reduced prices, they have to adopt their own strategies in order to survive in the market.

Cabbage and watermelons, are normally graded based on size. Price offer to farmers is based on the size. At destination markets, the produce is offloaded in the open where retailers and consumers meet to buy. The same strategy is applied to tomato and pepper.

For the Techiman market, producers and traders from Northern Ghana, Kumasi, Accra and other traders outside Ghana (Burkina Faso, Togo and Cote d' Ivoire) start marketing activities from Wednesdays to Fridays. Maize is traded more in Techiman and it is one of the important crop traded in all the other four agro-ecological zones where the research was conducted.

Maize is either supplied to Techiman market by farmers or aggregators. In the communities, traders measure the maize with “Alonka” from small farmers and bag them. In the market, other market agents who have stalls sometimes buy from large farmers who are able to carry their maize to the market and those who aggregate from the communities or facilitate the transaction process for a commission.

These wholesalers sometimes buy in larger quantities during bumper harvest and store for lean season when the prices are high, or they buy and resell directly when they are sure of good market. Note that there are different sacks used for measuring maize in the communities which is called “bush weight” for those in Brong Ahafo and northern Ghana, it is called “Accra weight”. Bush weight is bigger than the normal cocoa sacks used for bagging maize. These types of sacks are usually used in the hinterlands, especially areas which are far from towns and cities. The other type of sack is the Accra weight. This is the normal sack of about 80-100kg sold in destination markets and for other consumers and retailers in the urban areas.

Other marketing arrangement is when wholesalers and poultry farmers sometimes go to communities themselves and buy directly from farmers. Unlike the vegetables, maize prices are normally determined by demand and supply. This could be because maize could be stored for a long time, buyers are many from different places and some farmers can also deal directly with consumers, industry players such as poultry farmers and wholesalers from urban areas.

Yam is another important crop traded in Brong Ahafo and Northern Region where the research took place. At Techiman market, yam is aggregated from communities, other districts and even outside the region. Itinerant wholesalers travel to these areas to bring yam to Techiman market. The yam is sometimes sold to market queens in Techiman or other traders from Accra, Takoradi and Kumasi who meet for business. In the FGD in Nankuma Village in the Nkoranza district, participants said the yam is either sold at the farm gate in Nankuma, to be sold Nkoranza market, Techiman market, Offinso or Kumasi in the Ashanti Region or sometimes sold to traders from Accra.

For Diare community in northern Ghana, most food crops grown and traded are rice, maize soya, groundnut and yam. Farmers and traders actually gain little profit and bear little risk in producing maize and rice due to their ability to be stored for good prices. Rice is sometimes aggregated using “Alonka” and sometimes easily sold in either Savelegu market or Tamale market limiting profit margin by traders. For Yam, it is sometimes retailed by farmers at the road side, but large quantities are sold to other wholesalers from Savelegu and Tamale. The chain of food distribution is not linear as there are different channels through which these products get to the consumer.

5.4 The challenges and strategies of market agents

The role of middlemen in food distribution and marketing is crucial as they sometimes act as financiers for farmers thus share risks of crop failure. Some also go into contractual agreement by supporting farmers with inputs and credit in exchange for guaranteed market. As a market woman Ama stated in Techiman *“last year I took a loan and hired a tractor and ploughed for 30 farmers in Nkoranza to produce watermelon for me to buy. I also bought them the seeds, but after they harvested, some of them sold the produce to other buyers and said there was yield failure. We didn’t sign any paper agreement. So, I have been making savings from chop money my husband gives me to pay the bank loan”*.

Another trader in Begoro recounted that *“The road network is bad in Ghana, police extortion is high, postharvest losses and perishability in the transaction process is huge. For effective business transaction, government needs to address the infrastructure challenges”*

On the other hand, their reward in this hassle is the ability to control the market, control prices at farm gate and at the consumer level. They sometimes overweigh food crops from farmers (bush weight) and repackage at standard weight for consumers or other urban traders. A trader in Techiman indicated *“Sometimes we make losses in the business, so when we go to the village, you have to use big sack (maybe size 5) to measure the maize because the farmers will not agree to reduce the price, and when you also get to Accra, you also bag in standard bag so you can make profit. When I bag 4 bags in the village, I will get 5 bags with the Accra weight”*.

This practice of weighing and rebagging is usually met with criticisms from producers who see this as unfair practice within the food distribution process. Kwadwo, a farmer at Nkoranza, in Brong Ahafo Region lamented. *“I am never happy with them, they use big sacks to measure the*

maize, the price given is not good and when you send your maize to the market yourself, they won't allow you to sell". A similar view is held by tomatoes farmers in Ada as Alomo narrates his experience with market women "I am not too okay with the prices offered. With the issue of taking the items to the market I sometimes do so, however, because the farm produce is a lot, I try to sell most of them at the farm gate. Moreover, the market women wouldn't allow us to sell at the market place because we do not belong to the association and for that matter, I hardly go to the market to sell. Even though I am not extremely happy with their prices".

In order to ensure sanity and protect the interest of members, the middlemen or marketing agents sometimes form cartels which is commonly known as "market queens". Market queens are informal associations or groups who control how the trading business is conducted in a given market. In Agbogloshie market or in Ashaiman market in Accra for instance, if you are not a registered member of the association, you cannot sell your wares directly without sanctions from the market queens. A farmer relates his experience with these powerful market association; *"You dare not take your goods to some markets yourself, it will get rotten and nobody will buy. In 2016, I took my tomatoes to Agbogloshie market, the women nearly seized them, they never allowed me to sell myself and the tomatoes were spoiling. I begged them to buy a box at Ghc 50 when the market was selling for Ghc 500.00. Since then, when I don't get buyers here, I will rather allow my tomatoes to spoil on the farm"* (Dugba, tomato farmer in Ada).

Also, in the Yam market, farmers and other traders who are not registered members are allowed to bring yam market. The market is controlled by registered middlemen who normally take a commission, worth 10 percent on every 100 tubers of yam sold. A yam farmer in Nankuma stated *"sometimes selling your Yam in the farm is good even though the price is very bad in the farm, because when you take them to Accra, somebody will collect and sell for you. If you don't accept the price they give you, your yam will rot, but getting buyers here is a problem and yam cannot store for a long time"*. This clearly calls for rethinking on food processing and distribution, in addition to dealing with harmonization and regulation of the trading activities in the agricultural sector. A liberal system does not work and cannot reflect the forces of demand and supply due to the monopoly and oligopolistic relations in the imperfect markets.

5.5 Activities of transport operators

Another important actor in food distribution is the transport operator, a few of whom may also be traders. The transport operators are also categorised into local transporters who use tractors and motor tricycles to convey produce from farms to the nearest aggregation centres. The motor tricycles popularly called "motor king" is commonly used by women at places that tractors and other big trucks are not able to enter. A market woman describes different transport mechanisms in a focus group discussion in Savalugu in the following quote; *"Usually it is the inability of cars to go to the farms that make us go with the 'motorkings' and before you think of hiring the motorking to transport your goods, you will first of all take that into consideration before bargaining for the goods you are to buy"*. (Fulera, market woman, Savelugu, NR). For another

woman farmer who doubled as a trader in Nkoranza, *“the tractors are usually used to convey large quantity of food stuffs such as maize, watermelon and yam to the aggregation centres for other trucks to carry to the markets. If you have a small load you must resort to the motor king”*.

In this scenario, is it not possible investment in mechanization also to target smaller machines like motorkings for food distribution which are flexible and can navigate the bad roads and can easily be managed by poor rural women on their own?

Big trucks ranging from cargo vehicles to trailers are commonly used in conveying wares from districts and aggregation centres to long distance urban areas. Their constraints in the distribution circle has to do with poor road networks, high cost of spare parts, high cost of fuel and harassment and bad attitude of MTTU officers and police barriers on the high ways. According to the car owners and drivers interviewed, they do not go to certain areas for loads due to bad roads, especially in the raining season. As one transport operator shares his experience *“for me, I will never go to some villages for goods. The last time I went to take maize in Atta-Krom in Kintampo area, my car remained there for one week before we were able to remove it. So, when I am taking goods in a village, I have to charge more to take care of the unforeseen problems, and even with that, I won't go to some areas.”*

Another trader who doubled as transport owner recounted the problem she encountered with police in bringing tomatoes from Burkina to Accra *“the Burkina Tomato is good, but we suffer a lot on the road before we get to Accra. The police take a lot of money before allowing us to pass, especially those from Burkina side and if you are not lucky to have a problem with your car papers, they will detain your car for all the tomatoes to get rotten on the road”*.

As shown earlier in Table 19, the cost of transporting agricultural produce in Ghana is responsible for high food prices. These emanate from poor road networks, high fuel and spare parts cost, police corruption and inappropriate trucks for perishable goods.

5.6 Local market integration

This section focuses on the connection between various markets and how changes in a given market influence food supply and prices in other markets. The section will also consider strategies adopted by producers and buyers to maximize profit. Market integration in this perspective can be defined as the degree to which the interaction between producers and buyers in a given market influences quantity produced, supplied and priced in different markets.

In Ghana, a number of factors act simultaneously to influence integration in the various markets. This include factors that influence production such as inputs price and climate change variabilities which influence the type and nature of farming. Government policies, urbanization associated with changes in taste, emergence of high valued markets, foreign policies all determine how the market is integrated. The degree of market control by actors in the distribution chain such as trade associations, market queens and transport union also influence market integration.

Government policies that ensure proper feeder roads, good transport system in the farming communities, input subsidy programmes such as fertilizer subsidy, trade and taxation policy play significant role in the degree of market integration. Government investing in feeder roads for instance will allow easy movement of goods from farms and source markets to the destination markets, especially in the urban centres.

In addition, when there is limited investment in storage facilities and processing, a large part of food produced, especially perishable food may go waste during bumper harvest in the food producing communities, while the same food is sold at high prices just after about three months. As a farmer stated in FGD in Bosuso in the Eastern Region *“Shortage of food is mostly in June and July where we buy imported food from Accra at a very high price. From August, crops start maturing and in September, produce are in their abundance, storage becomes a problem for which large quantity go wasted. Sometimes we sell to Accra women at give-away prices.”* For a farmer in Nankuma in the Brong Ahafo region *“Scarcity of food is mostly from the 6th and 7th month of the year where we buy rice and maize from Techiman, but in August through to November, Techiman people come here to buy our yam and maize at very cheap prices”*. This calls to question, how much investment is needed for food processing and storage? Also, what is required to create enabling environment for all year-round farming and food supply? These are great opportunities for agro-industries.

Again, taxation policies can influence imports of subsidized food from outside that compete with the locally produced food in the urban areas. This may promote local food production and enable the circulation of production by different ecological zones that meet the shortfalls at any moment due to varying rainfall regimes. Government policy that promote exports and industrial products may affect food supply in rural areas as most farmers with capacity to produce for exports and industries are commercially oriented farmers. This may affect food production and consumption in the rural areas as the traditionally acclaimed nutritional foods consumed by rural population may not be produced or the available land for food crops are rather used for producing export crops. A typical example is the recent upsurge in cashew farming, which has led to many maize farmers converting their lands for cashew farming in the Brong Ahafo Region. Land owners are taking lands from poor smallholder food crop producers and selling them to big cash-crop farmers. This was a statement from 42-year-old farmer in Ekumsa Dumasa in the Brong Ahafo Region *“I used to grow maize, cassava and yam and the market for these crops these days are not good. In 2012, I changed to cashew farming and I think the cashew is helping me. The yield is good, and the price too is good. Nana Ameyaw will always give you money for labour and when you harvest, he will come and buy all your cashew for export”*. We see the role of vertically integrated markets here as export agents and processing factories arrange and support cashew farmers which gives them an urge over food crops and therefore outcompetes them in terms of labour and land relations.

Many farmers from Northern Ghana are moving to Southern Ghana for cocoa and cashew farming which can lead to low supply of food in the North. According to Bajoawose Adama, a cashew farmer from Nkoranza *“I am from Upper East Region, I came to Nkoranza in 2014 after a friend*

told me cashew farming was good. In Upper East Region the rains were bad, and we were not getting enough yields from the groundnut I used to produce. Even though I haven't started harvesting my cashew, I still think farming in Brong Ahafo Region is better than in the North because of the bad rainfall there".

Also trade policies such as Economic Partnership Agreement of Africa Caribbean and Pacific (ACP) countries with the EU may also affect the degree of market integration. For instance, many farmers in the Eastern Region and other parts of Ghana were producing vegetables such as chilli pepper, bottle gourds, luffa gourds, bitter gourds and eggplants for European market since 2015. When Ghanaian vegetables were banned from EU market for not meeting EU phytosanitary regulations in 2015, it affected pepper production as most farmers resorted to the local market of which they claimed price offers were not attractive. A farmer stated in Begoro, *"We used to sell our pepper to traders in Accra who buy for exports, after the ban on Ghana pepper from entry into EU market, we started selling to the local market at very low prices"* (Obiri, Farmer, Begoro, Eastern Region). *"I have to stop producing pepper because many people in this town produce pepper for consumption and the Accra women who used to buy our pepper have also stopped coming to us"* (participant at a focus group discussion, Begoro, ER).

At the sub-regional level, ECOWAS protocols that allow free movement of goods and services influences market integration domestically. According to a trader from Ashaiman market, *"we stopped buying tomatoes from Navrongo and Akumadan and we now buy from Burkina Faso because their tomato is of better quality than the Ghana one, even though the Burkina police take a lot of money on the road"*. Conversely, farmers in Ada take advantage of protocol to export to countries in the sub-region as explained by Papa, *"For the pepper sometimes you have it home already so they come to the house to buy. Some of them come from Accra, Ashaiman, Tema and even Togo"*. Another trader from Ada says, *"I sold my pepper in Togo in 2016, the price there was better than Ghana"*. Regional markets are good for farmers. But where seasonality defines the circulation of produce, it leads to a win-win relationship.

When there is change in taste in favour of imported goods, it may reduce the demand for the local produce thereby limit demand for food from the hinterlands. The consumer survey shows that more people in the urban centres of about 47% in Accra and 86% in Eastern Region depend on imported rice as their main staple (see next chapter). The degree of market associations and behaviour of market actors such as market queens and traders cumulatively determine how the market is integrated. These traders often develop into homogeneous groups of informal associations and defend their interests. The following are quotes from farmers trying to sell in some markets and their experience. *"Market women will never allow you to sell in the market and if you try you will bring back your produce"* FGD in Ada: *"the buyers have networks and they agree on a uniform price for the produce and won't allow you to sell in big markets, but we the farmers have no such associations or unions to bargain for us"*. The ubiquitous smallholder farmer has therefore very limited chances of being a strong market player except for extreme limited periods of natural seasonally defined scarcity. Thought spatially, the markets may be integrated, they are controlled

thereby reducing the role markets should play in enhancing farmer livelihoods. This discourages investments in farming and sends mixed transmissions to the planning stage of production.

Other determinants of market integration are: population growth, urbanization and emergence of high value markets. Under the normal circumstance, these factors are expected to create demand in urban areas which will trigger food supply from rural farmers. Unfortunately, interaction with some hospitality industry players indicate a significant number of hotels and restaurants sourcing their wares outside Ghana. According to them, the decision is based on quality of produce from farmers, consistency in supply and preference of customers for foreign goods. According to a shopping mall in Accra *“we source our wares from South Africa and Cote d’Ivoire due to poor quality tomatoes from Ghanaian farmers”*. However, there are others like Azmera who rely 100% on local products *as captured by the owner in “We provide only local Ghanaian dishes. We don’t do any continental and foreign dishes. All the dishes we do are Ghanaian home-grown dishes. We source about 60% of food crops from Accra and the rest from other parts of Ghana. No imports”*.

An examination of food markets is critical to the survival of farming in Ghana, and also to the survival of the service industry helping post-harvest activities. Without interventions, the state is allowing the system to destroy itself. These interventions must transcend governance of markets to promotion of storage and processing, and changing consumer attitudes towards new food products.

5.7 Challenges in marketing/food distribution

Marketing and distribution constraints facing actors were poor transport system (bad transport network, and the attitude of the police on the highways), seasonality of food production, poor government trade policies, postharvest losses, poor quality of food produced and mistrust between farmers and traders.

The poor transport system leads to high cost of foods in urban centers to compensate for perishability, breakdowns, and bribery. The poor roads also have impact on the vehicles that ply them leading to consistent breakdowns. According to Yusif, a driver who plies the Tamale-Kumasi-Accra route *“the bad roads cause’ breakdown of vehicles, hence I do not go to certain areas to convey food crops when they call me to come”*.

According to a transporter in a Focus Group Discussion at Techiman market, *“Some of the goods get rotten in the process of transporting them from the rural areas to the marketing centres. Moreover, the police also delay the transportation process leading to losses. They sometimes charge us unnecessary bribes before allowing us to go”*. For a driver in Begoro, *“the police on the road from here to Accra is not a serious problem, our problem is the bad road and cost of spare parts and fuel; for the police, ones you put Ghc 2.00 in your licence and give them, and they will allow you to go. Government only has to legalise collection of Ghc 2.00 to the police”*. Another

trader stated in Begoro, *“for us, the money given as bribe and bad nature of transport is affecting our business, so what we do is to also increase the prices of our goods when we send them to Accra to cater for the problems on the road and the money given to the police”*. Unofficial expenditures during transport could hinder the value chain activities and reflect in prices at the market.

Another problem with marketing and food distribution is seasonality and variability of agricultural production. While there is enough or glut of food in certain seasons of the year leading to food spoilage and low prices, there is also food shortage, high prices and hunger in other parts of the country in different parts of the year which is affecting activities of market agents. The irony of glut and shortage calls for investment that will ensure consistency in food production and food distribution across regions and seasons.

Also, government policies aligning to global trade rules that allow importation of cheaper foods may also limit market access by acting as a disincentive for local production. Also, Ghana signing the Interim Economic Partnership Agreement (IEPA) with EU has serious implication on smallholder farmers' access to domestic market due to unequal level of production efficiency of Ghanaian smallholder farmers and that of European farmers. Under the IEPA in particular, Ghana is unable to adjust its tariffs to protect vulnerable local industry such as poultry, rice and tomato sub-sectors. While many agricultural products considered 'sensitive' have been excluded from liberalisation, the existence of a standstill clause is depriving Ghana the policy space to use tariffs as a trade management tool. Further, the exemption of few non-traditional exports (horticultural, processed cocoa, tuna etc.) will force out local industries producing import-competing products for the domestic market due to competition from foreign products. The current rejection of Ghanaian vegetables from the EU market serves as a signal to Ghana as standards are set by the developed countries.

In addition, limited investment in extension services affects the quality of food and invariably affecting marketing and access to high value market. Most high value markets attributed poor quality as a reason for relying on imported vegetables to meet consumer demand. Inconsistency in food supply is another problem causing hotels and supermarkets to rely on imports. Misapplication of agro-chemicals leads to spoilage of food items which is affecting profitability. A trader in Techiman market stated *“these days the farmers use too much chemicals in cabbage and watermelon production. This makes them spoil fast when you buy for resale”*. This was also the words from a farmer concerning access to extension services, *“The government is not concerned*

about the health of Ghanaian. For example, when the pepper was banned from entering EU market, training was only given to those who are producing for export, leaving those who produce for local consumers untrained, and they continue to misuse the chemicals". This bias towards exports is worrying and deserves immediate attention.

5.8 Opportunities

The drivers of food marketing and distribution in Ghana are population growth, urbanization, and fluctuation of food prices. These drivers come with opportunities to improve the food systems, increase production, increase incomes and create jobs. Population growth for instance, is expected to reflect in high demand for food which translates into higher food prices. The high food prices call for farmers to increase their production. This can only be possible if government intervenes to direct the production path to avoid the tendency of commercial farmers with financial muscle taking over production resources such as land, labour and water and turning the smallholder farmers to farm labourers - proletarianisation. Also, they may also alter the production pattern towards specialized food production for exports and industries ignoring the current farming of traditional nutritious foods grown by the local people. This can cause hunger and food insecurity among the rural population.

Also, seasonality that is associated with glut and food shortage in the rural areas provides opportunity for private sector participation in food processing and value addition to ensure all year-round food production, distribution and consumption. With the high youth unemployment, engaging more hands in processing, packing and distribution creates jobs for the yearning educated unemployed youth who shy away from direct farming activities. This will further lead to rural development since communication facilities, banking services, transport network, electricity and other social facilities may emerge in mid-size towns and increase non-farm activities.

Trade liberalization, associated with free trade and demand for fresh vegetables and fruits in developed countries creates opportunity to access regional and international markets by local producers. With improved investment in feeder roads, extension services and irrigation facilities; Ghana with comparative advantage in fertile agricultural lands can take advantage and improve on the quality and supply of food for the local and international market. The emergence of hospitality industries, and high value markets serving the elite and expatriate workers in the mines and oil and gas industry require high quality fresh vegetables and fruits with consistent supply. This is an

opportunity for local producers. With investments in good varieties, irrigation and extension services, the youth can target these markets and other markets outside Ghana.

CHAPTER 6. FOOD CONSUMPTION PATTERNS

This section examines consumer food consumption patterns by assessing types of food crops purchased, their preferences and reasons for choices. We specifically seek to explain why local food products do not compete well with foreign ones and how to reverse the trend. The “demand side” of the food system is defined generally by price, location, consumer preferences, knowledge, tastes, cultural habits, and perceptions. These factors are in turn influenced by higher level trends and processes such as demographic changes, economic changes, globalization, urbanisation and migration. We argue that as the population of Ghana increases in number and quality in terms of education, changing attitudes and incomes, so too will their diets and attitudes towards traditional and new dietary formulas from other regions and countries.

6.1 What food is consumed and from where

The average age of the consumers interviewed was 37 years across all regions (see Table 21). This age group constitute the majority of decision makers in households across Ghana.

Table 21: Age of the Consumers surveyed

Indicator	Region				Overall	Prob>F
	Greater Accra	Eastern	Brong Ahafo	Northern		
Average Age of the Consumer	39.3	37.1	36.6	36.0	37.3	0.0571

The main food items purchased by consumers on the survey day at the main markets fell into the categories of roots/tubers/suckers, grains, vegetables and fruits. Table 22 (also shown as Figure 5) presents the distribution crops consumed in the last 12 months. The results are presented by the type of crop and region of consumer. Across the types of crop, overall, we find that Grains (37.9 percent) were major crops consumed in the last 12 months followed by roots and tubers/suckers (37%). Fruits (2.2%) were the least consumed food item among the sample consumers. Roots and tubers/suckers were largely consumed in the Eastern region (41 percent) with Northern region being the least consumers. Northern region (56%) dominates in the consumption of grains relative to the other regions. Out of the 22.9 percent consumers who consumed vegetables in the last 12 months, 42.7 percent (largest consumers) were from the Eastern region. The results further reveal that Brong Ahafo (45.7%) region had the largest share of consumers of fruits compared to the other regions.

In comparing the crop types within regions, we find that the largest proportion of the consumers in Greater Accra (49.8%) and Northern region (56.7%) had maize as their major crop consumed in the last 12 months while roots and tuber/suckers was the largely consumed in Eastern (41 %) and Brong Ahafo (38 %). In all regions, fruits (Greater Accra (0.4 %), Eastern (2 %), Brong Ahafo (3.4 %) and Northern (2 %)) was the least consumed as compared to the other crop types. The results further revealed that vegetables were the largest share of food items purchased on the shopping day while fruits constituted the least purchased food item.

Table 22: Regional distribution of major crops consumed in the last 12 months (Multiple responses)

Crop type	Greater Accra	Eastern	Brong Ahafo	Northern	Overall
Roots & Tubers/Sucker	88	249	178	84	599
	14.69	41.57	29.72	14.02	100
%	37.45	41.02	38.03	27.36	37.04
Grains	117	188	134	174	613
	19.09	30.67	21.86	28.38	100
%	49.79	30.97	28.63	56.68	37.91
Vegetables	29	158	140	43	370
	7.84	42.7	37.84	11.62	100
%	12.34	26.03	29.91	14.01	22.88
Fruit	1	12	16	6	35
	2.86	34.29	45.71	17.14	100
%	0.43	1.98	3.42	1.95	2.16
Total	235	607	468	307	1,617
	14.53	37.54	28.94	18.99	100
	100	100	100	100	100

Source: Consumer survey from four major markets in Ghana. January 2018.

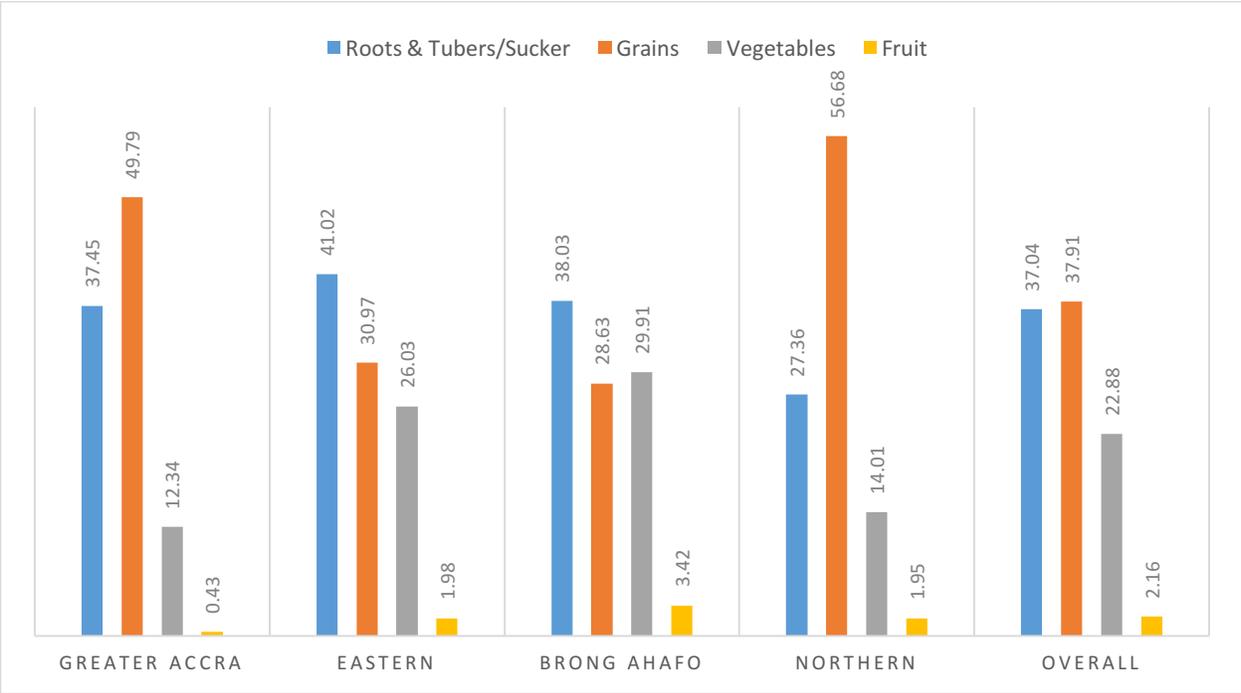


Figure 5: Regional distribution of major crops consumed in the last 12 months

The source of the food items purchased by the consumers on the day of survey is shown on Table 23. We find that consumers purchase their food items from multiple locations with a majority coming from their own region. Food items produced from another region (33.2 %) was the next important source, while imported (9.8 %) food items being the least purchased. The manager of a high-class Ghanaian meals-only restaurant in Accra describes her sources of food stuff as follows:

“We source all our items from local markets and we deal directly with some farmers as well. For instance, with tilapia- we deal with farmers from Akosombo [Eastern region]. We drive there and the take the fresh catch from the farm gate. We purchase our foods mainly from Mallam Atta, Madina, and Agboghloshie markets [all in Greater Accra region] and then we go to villages in Akosombo and some villages in the Eastern region to buy from the farm gate. We source about 60% [our food stuff] from Accra and the rest from other parts of Ghana. No imported foods are used in our restaurant” (Manager of restaurant– Accra – January 2018).

For the preparation of local dishes, consumers still rely heavily on crops produced in Ghana. The advantages of having these fresh and maintaining the constant taste that consumers are used to explains the preferences.

Table 23: Origin of Food items purchased on the day of survey

Type of crop	Same region	Another region	Import	Total
Roots & Tubers/Suckers	67.86	32.14	0	100
	20.15	16.36	0	16.91
Grains	58.75	15.56	25.68	100
	14.56	6.61	36.87	14.11
Vegetables	54.51	36.14	9.36	100
	61.23	69.59	60.89	63.98
Fruit	46.15	49.45	4.4	100
	4.05	7.44	2.23	5
Total	56.95	33.22	9.83	100
	100	100	100	100

Source: Consumer survey from four major markets in Ghana. January 2018.

In terms of purchased food items produced from another region, consumers from the Greater Accra (55.9%) represents the largest followed by Northern region (26.6 %) with Brong Ahafo (3.6%) being the lowest. Within regions, we find that more of the consumers purchased vegetables (Northern 80.7 %; 71 % for Greater Accra, 51.1 % for Eastern, about 45.5% for Brong Ahafo) relative to the other food items. Fruits were found to be the least purchased food item Greater Accra (4.7 %) and none in Brong Ahafo regions.

Figure 6 presents the origin of food items consumed in the last 12 months. The results indicate that more of the food items consumed in the last 12 months were produced from the region of the respective consumers (62 %) followed by food items produced from another region (about 19 %) and about 19% from imports, except for the Greater Accra Region. Imports constituted a huge proportion for Brong Ahafo and Eastern Regions, mainly of rice and vegetables.

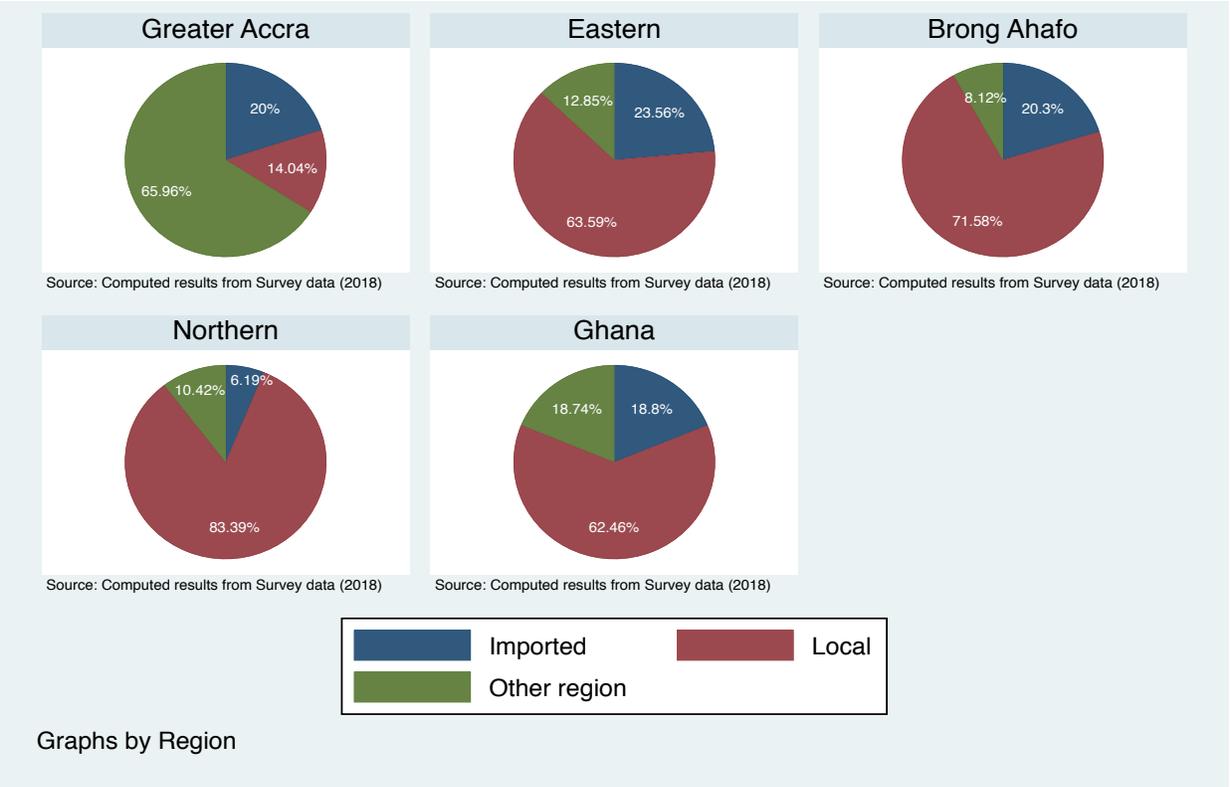


Figure 6: Origin of food items consumed in the last 12 months (Source: Consumer survey from four major markets in Ghana. January 2018.)

Table 24 shows the origin of major food categories consumed in the last 12 months. The results indicate that Grains (37.9%) was the highest proportion of food item consumed in the last 12 months with fruits (2.2 %) being the least consumed. Roots and tubers and suckers were mainly procured from within the local region, while grains crossed both regional and international borders. Yam is the most mobile crop due to its production in the middle zone and high demand in urban Ghana. Similarly, people consumed more of local vegetables than from other regions. However, seasonally, foreign tomatoes, onions and carrots, and cabbage now abound in major markets country wide.

Table 24: Origin of food items consumed in the last 12 months by Region

Crop type	Local	Other region	Import	Total
Roots & Tubers/Sucker	78.8	21.04	0.17	100
	46.73	41.58	0.33	37.04
Grains	46.66	20.39	32.95	100
	28.32	41.25	66.45	37.91
Vegetables	62.16	10.54	27.3	100
	22.77	12.87	33.22	22.88
Fruit	62.86	37.14	0	100
	2.18	4.29	0	2.16
Total	62.46	18.74	18.8	100
	100	100	100	100

Source: Consumer survey from four major markets in Ghana. January 2018.

There is good cross regional trade in Ghana as seen in the analysis above showing high levels of integration of markets. Transportation networks are important in the realisation of regional market integration. Dealing with the effects of seasonality mainly through filling the scarcities of food stuff in other regions builds the complementarity between the different ecologically diverse production local systems. The role of marketers in the distribution chain is critical to the sustenance of the food system. The high levels of perishability still recorded in Ghanaian agriculture is a reflection of imperfect integration and low technical capacities in processing and storage.

6.2 Reasons for choice of origin of food items by consumers

Consumers set the basis for food system activities by dictating farmers planning decisions which reverberates throughout the food chain. The importance of market demand to farmers and for the survival of the entire food system makes an understanding of choices of food from different locations important. A member of the Focus Group in the Greater Accra region summarises how market dynamics reflects in farmers' choice, in the following statement;

“The market is the sole decider of what type of crops we produce in this community. You know because we were producing the cassava in larger quantities, we had little land reserved for the tomatoes. But now that there is no market for the cassava, our staple crops now are tomatoes, pepper and water melon. These three are our main focus now in this community”.

The demand from consumers is defined by a complex interacting set of variables as shown in Table 25. We observe that the quality (30.6) of food crops influence the choice of the food item source by the consumers. Interestingly, the ease of cooking a food item was the least reason for choice of

food items. The taste of food varies by origin and tends to influence consumer choices. Yam farmers in Brong Ahafo for instance state that *Pona* variety of yam was the preferred variety by consumers in Ghana, while the more preferred source was northern Volta and eastern parts of Northern Region where climatic and soil conditions culminate in a soft, sweet tasting yam.

Across the types of crop, it is observed that except for fruits, reliable supply of food was a major determining factor in the choice of origin for the food items (roots and tubers/suckers (32.3%), Grains (29.6%) and vegetables (30.4%). Reliability is important to prevent consumers changing food items with different taste and texture attributes. Reliability also related to distance and transport cost. Therefore, consumers bought more from their local vicinity. To maintain a reliable supply of critical foodstuff, some restaurants have engaged farmers on a contract basis, while others support farmers with inputs and mechanisation needs as explained in this following quote:

“We support some farms in the eastern region with finance and inputs to produce specific crops for us. I will give you one example. There is a ginger farmer that we support. He was farming just a small plot of land and we went in bought the whole farm and gave him money to expand. So, it is a business we do with him now. We also support a couple of pineapple farmers in Aburi from whom we buy pineapples in large quantities, because we use about 150-200 pieces of pineapples per day. We helped them buy simple irrigation systems and hoses” (Manager of a restaurant in Accra).

A similar relationship exists between traders and farmers (see section on distribution) where traders acting on the choices of their consumers have loose contracts with farmers to produce specific qualities and quantities for a guaranteed market.

Table 25: Reasons for the choice of origin of Major crops consumed in the last 12 months

Indicator	Roots & Tubers/Sucker		Grains		Vegetables		Fruits		Overall	
	N	%	N	%	N	%	N	%	N	%
High Quality	281	21.6	256	21.0	187	24.3	12	15.8	784	30.6
Taste good	295	22.7	319	26.2	170	22.1	29	38.2	874	24.4
Low cost	248	19.1	164	13.4	143	18.6	13	17.1	589	24.4
Long shelf life	22	1.7	62	5.1	16	2.1	1	1.3	116	21.9
Reliable supply	420	32.3	361	29.6	234	30.4	13	17.1	1094	16.5
Readily Available	8	0.6	2	0.2	0	0.0	1	1.3	11	0.3
Easy to cook	0	0.0	4	0.3	0	0.0	0	0.0	4	0.1
Others	25	1.9	52	4.3	20	2.6	7	9.2	106	2.9
Total	1299	100	1220	100	770	100	76	100	3578	100

Source: Consumer survey from four major markets in Ghana. January 2018.

Increasingly the shelf life of food items is perceived to be on the decline especially for vegetables and fruits. Many consumers and even farmers during the Focus Groups Discussions blame this trend on the increasing use of agro-chemicals. Farmers in Brong Ahafo and Northern Regions blame herbicides for shortening the shelf life of tomatoes, yam and watermelons. They blame the profit motivation of cash crop farmers who prefer higher productivity over quality. It is claimed that consumers prefer tomatoes and onions imported from our northern neighbours (Burkina Faso, Mali and Niger) because these can stay for a week or two, while those from Ghana hardly make a few days. Farmers explained the difference in quality to both variety used and input usage. Organic manure is argued to lead to vegetables with longer shelf life than fertilisers.

In terms of vegetables, consumers in big cities preferred rural sources than urban gardens due to the quality of water used in watering them. They mainly depend on the word and integrity of retailers about the origin since labels are not used. Some consumers used the season to tell if particular foods were from other regions either than their own.

The use of pesticides is a major source of worry to consumers. Consumers lamented that the pesticides are now widely available in Ghana with the consequence that rural illiterate farmers were likely to misuse them due to ignorance of the effects on consumers or simply to reduce losses while ignoring effects on consumers. Determining what produce is contaminated is difficult to tell

which makes high income earners resort to supermarkets (interviews with restaurants and hotels) where it is perceived ‘modern farmers’ with the right agronomic practices will produce safer foods.

Table 26 shows the features of locally produced food that consumers do not like. Poor packaging (29 percent) is a major reason for consumers not liking locally produced foods across the regions. Where foreign substitutes exist such as for white rice, the packaging is always better than that of local rice which may often be sold in open air markets without scales and standards guarantee. Only a few consumers are less concerned with the cost of the food items. Since most local produce are already cheaper than foreign ones, it is normal to expect this result. Also, consumers are used to the seasonality of local produce, hence unreliable supply defines a rhythm in their consumption patterns.

High income earners will prefer the high quality of imported products to local ones. The rising preference for high quality rice such as Basmati and long grained American varieties is a reflection of the quality attributes. Similarly, the preference for onion from Niger and Mali, and tomatoes from Burkina Faso, and now carrots from Togo, Benin and the South Africa is a reflection for quality in terms of taste, looks, and perishability.

Table 26: Consumers’ dislike about locally produced crops

Indicator	Region				Overall
	Greater Accra	Eastern	Brong Ahafo	Northern	
Poor Taste	9	2	5	18	34
	26.47	5.88	14.71	52.94	100
	9	2	5	18	8.5
Poor packaging	3	26	37	50	116
	2.59	22.41	31.9	43.1	100
	3	26	37	50	29
Poor quality (Unattractive)	24	23	18	22	87
	27.59	26.44	20.69	25.29	100
	24	23	18	22	21.75
High Cost	4	14	10	4	32
	12.5	43.75	31.25	12.5	100
	4	14	10	4	8
Unreliable Availability	16	3	11	2	32
	50	9.38	34.38	6.25	100
	16	3	11	2	8
Quicker Perishability	44	32	19	4	99
	44.44	32.32	19.19	4.04	100
	44	32	19	4	24.75
Total	100	100	100	100	400
	25	25	25	25	100
	100	100	100	100	100

Source: Consumer survey from four major markets in Ghana. January 2018.

The owner of a popular high-class Ghanaian restaurant shared her views on local food stuff as follows:

“What I don’t like about the Ghana food market is the fact that things are not standardised. You buy a box of tomatoes today at 200GHC in Madina market from one vendor. You move to the next vendor and it is 230GHC. Why that difference? Why is the price not consistent? No standardisation of pricing. Another problem is their presentation/packaging and preservation. They offload food stuff unto the dirty floor so it doesn’t look attractive and raises food safety issues, which for our clients is of most concern. Farmers, traders and transporters should package and present food stuff nicely. This will give more value to the items. Also, they don’t preserve the food stuff well. For example, pineapples: they stack them on top of each other and by the time they reach here the ones on the bottom are crushed. This doesn’t have anything to do with the production system or the quality of the product, it is just the way they transport them. So it makes the shelf life very short.” (Restaurant A owner – Accra – January 2018).

The frustrations of the restaurant owner reflect the concerns of most middle-class consumers who are the drivers of commercialisation of smallholder agriculture in Ghana.

6.3 Conclusions

The demand patterns generated by consumers is critical to defining the nature of the food systems. Consumers provide the incentives for changes in Ghana’s food systems from a subsistence to commercial orientation. Eating locally produced foods is an important characteristic of food consumption landscape as cultural affinities define local food dishes which often demand foods that are environmentally determined. Except for the capital city whose populations are diverse, and agriculture is of less importance, which therefore makes reliance on food from other regions more important. The source of food for most Ghanaians is therefore their own regions followed by those from other regions. The consumption of imported foods is limited to a few set of products, mostly meat and dairy, vegetables and some cereals which is a reflection of poor national capacities and seasonality of supply. Though imports may constitute a small percentage of food consumed per household, it is nonetheless growing in importance and putting a strain on the country’s food import bills.

Seasonality is an important determinant of food source to the consumer as defined by varying rainfall regimes due to the influence of the varying operations of air masses over different parts of the country. The single and double maxima rainfall regimes and the timing of the wet and dry seasons explain differential and fortunately complementary systems. An inter-regional system of dependence has developed whereby consumers depend on products from other regions when supplies from their own local production systems are out of season. In addition, the rising competition among regions in terms of quality of food products due either to variety or origin characteristics creates a preference for specific foods from other places, as in the case of Navrongo tomatoes and *pona* yam from Nkwanta. The level of market integration nationally is therefore recommendable and can be improved with better transport systems.

It is refreshing to note the operation of conventional determinants of choice of crops in Ghana showing the level of sophistication of the Ghanaian consumer. Quality is the benchmark which is afforded due mainly to the availability of choice between produce from other regions and imports. Gradually, quality has led to dramatic shifts of those who can afford imported foods. A competitive atmosphere has emerged where farmers within same region compete with themselves, then with other regions and then also with foreign imports. Consumers are becoming discerning, sophisticated and therefore may shift allegiance from locally produced items to others that provide the quality they desire.

Food safety and perishability are important considerations of consumers. Modernising smallholder farming has come with increasing use of chemicals and less emphasis on organic farming. Consumers are getting worried over the handling of these chemicals and therefore the safety of their foods. Food poisoning has been on the increase as a result of pesticide use and also storage agents. The poor shelf life of farm produce is an important indicator and determinant of choice of crops and therefore one reason for the preference of vegetables from neighbouring countries where the use of chemicals is lesser and organic system dominate.

The reasons for consumers preferring imported products are mainly the high quality, very good packaging, standardization and reliability. Guaranteeing these attributes for some products such as rice and vegetables locally is a post-harvest challenge rather than a production one. The processing, packaging, transportation of food products is poor in Ghana. Without some improvements in these components of the food system the shifts in preference to imported food items cannot be reversed. These are not activities for small farmers but for agro-based industries. The relationship between the service, industry and farming sectors is synergistic but poorly developed in Ghana. Improving this synergy is important for the food systems of Ghana. The role of policy in directing and facilitating investments in post-harvest activities and transportation is critical as the open market is slow in activating investments in unknown and perceived risky areas.

CHAPTER 7: THE POLITICAL ECONOMY DRIVERS OF GHANA'S FOOD SYSTEMS

Ghana's food systems are shaped by several global, regional and local drivers operating in a web of interrelationships between the different levels. Generally, rapid economic and income growth, urbanization, and globalization are leading to dramatic changes in demand patterns and diets translating into food system changes. Ghana's economy has grown significantly over the past two decades leading to some progress in the improvement of living standards. Significant changes are being experienced in the economic, social, political, cultural, demographic and environmental spheres which interactively redefine the drivers shaping agricultural and food systems. Global forces ranging from environmental, cultural, political and economic ones have acted at the global macro level in structuring the opportunities and threats that direct the changes in local food systems. Locally, both environmental, social and economic dynamics continue to drive changes in choices of farmers, traders and consumers along the food chain. An understanding of these driving forces is critical for navigating the threats they impose and for taking advantage of the opportunities they present. Ghana's food systems are undergoing dramatic transformation in response to rapid urbanization, biophysical changes, diet diversification, heavy importation, and the liberalization of foreign direct investment in the food sector.

This section outlines the broader drivers of change and how they interact with national and local forces in shaping our food systems.

7.1 The Global political economy

At the global level, the influence of global economic policies and environmental change act as powerful drivers of change of Ghana's food systems (Ericksen et al. 2010). The neoliberal policies reflect a set of political interests by agents of capitalism in the world economic system. The orientation of Ghana's economy towards more openness that links farmers to global vertical market networks integrates our economy with the flexible world of investments argued to bring the prosperity badly needed by the poor. Institutional reforms in governance propelled by the World Bank and IMF have tended to facilitate and deepen globalisation while weakening the role of the nation state in direct productive activities and unleashing the power of the private sector. Throughout the 1990s an outward-oriented development strategy with minimal role of the state became hegemonic in Ghana (Awanyo, 1995). A global network of agricultural commodity and input trade has deepened the commercialised landscape of agriculture in Ghana.

The inequitable nature of existing provisions of the "Agreement on Agriculture" constitute a major challenge to equity in global agricultural trade. The EU and the United States continue to maintain huge subsidies and protection policies in their agricultural sectors while preventing same in developing countries. The lack of political muscle by the global south has led to the North-South inequities being written into international trade law at the World Trade Organisation. These

inequities prevent the demand forces that would have galvanized developing country agriculture in such a globalized market (FAO 2007).

The production systems of Ghana are obeying the global logic of letting in imports of cheaper food items which hitherto were produced by the smallholders. The World Trade Organisation rules define the perimeters of the free trade which disadvantages nations whose farming sectors are not well developed and modernised. An export sector of tropical products which cannot be produced in temperate countries become the focus of the Ghanaian state with support from donors. The need for favourable balance of payment, given the emerging high import regime of food propels the support for export items such as cocoa and non-traditional exports. The provision of productive infrastructure and the right incentive systems for the production of these crops have encouraged an emerging group of wealth accumulating farmers. On the other hand, the removal of subsidies had paved the way for more imports of cereals especially rice. The decimation of the food sector in the 1980s and early 1990s are relics of global political economy of dumping of overproduction from the West under the disguise of an efficient global market with equal players and plentiful benefits. The entire food system altered with consequences of deepening poverty for smallholders and a high dependence on imported food for the growing urban population.

Recent changes in global food systems have again transmitted new threats and opportunities to the Ghanaian food system. The growing demand for food globally and fear of food price rises have turned the focus of production on African countries hitherto considered environmentally and technologically unfit for modern agriculture. Awakening the sleeping giant, that is, African agriculture (World Bank 2009), is the new discourse that opens up new doors for different actors in the food system in Ghana. Donor support and push for reforming land tenure institutions to enable foreign companies acquire more lands for direct production and also strategies to incorporate smallholders into commodity value chains as out growers gained currency. Building on the previous discourse of land tenure security, the governance of land now included state assistance in the acquisition of large tracks of land for a modern large-scale agriculture. Donor support to reform the institutions for governing land increased while direct funding for agents from advanced countries venturing into the country to invest into agriculture increased dramatically. The potential of smallholders in Ghana in producing food has been forgotten and downgraded as traditional, low-input, low-output and unviable. Where smallholders mattered in policies, they were considered simply in their role as appendages to bigger global players in vertical networks and as labourers in modern farms.

The export focus of the Ghanaian state has of late been complemented by the need to reduce the high import burden of importing food. This initiative again has a global push as the space of production is being foreignized. With the increase in size of the Ghanaian market and its associated dynamism in terms of spawning non-farm activities, a domestic profitable landscape has been born, which requires firms with the right financing and technologies. The nature of global forces have changed dramatically from the traditional export-oriented system to a more circular-economy where capital locates in new market niches irrespective of destination of the products and kinds of

actors. Actors along the food chain where greater potential for accumulation are increasingly foreignized.

Fluctuations in global commodity prices have acted significantly in shaping our food systems (FAO, 2011). Farmer responses to prices of our major exports cocoa has seen changes in land use in several regions reflecting rising and falling prices. Changes in prices for non-traditional crops has encouraged the use of new lands for fruits such as papaya, mango, pineapples and cashew nuts. Currently the returns to cashew and mango are higher than cocoa leading to farmers diversifying into these crops. However, global agricultural commodities are controlled by a powerful set of players mainly companies and trading houses who set the stage to their advantage. Vertical integration of farmers cultivating non-traditional crops may not necessarily lead to sustainable benefits and environmental outcomes (Deininger and Byerlee 2010).

The emerging new export markets are difficult to compete in by smallholder farmers on the basis of cost, quality and quantity. These markets are more consumer driven and demanding in terms of the type, quality and safety of agricultural products, more concentrated and integrated, and much more open to international competition (Hazel and Wood 2008). To benefit from these niche markets, farmers must meet the stringent requirements and regulations, which ultimately deprives many from enjoying the opportunities international trade promises through liberalization of agricultural markets. Many small farmers are particularly under threat from these developments and cannot easily compete with large farms. The resort to contract farming in vertically integrated markets is fraught with price-fixing, unequal relations, and risks of abandonment of contracts due to shocks from the market and companies (Amanor 2009; Amanor 2010).

Finally, regulation of global markets with ever increasing rules on pesticides and farm practices has led to Ghanaian farmers losing out when products are rejected, and bans imposed on these exports. The EU has banned Ghanaian vegetables and fish products on a number of occasions with severe ramifications on the food system and farmer livelihoods. Same applies to fruits such as mango which was also banned due to the fly infestation. Requirements for expensive certification adds to reduce the opportunities for smallholder involvement in lucrative export markets. An open global market is contingent on the needs and conditions of the western nations rather than free movement of products. Regulation serves the purpose of ensuring a lopsided benefit regime, often under the guise of safety and phytosanitary rules.

Though the new high-value agriculture linking farmers to lucrative foreign markets is a new and welcome opportunity, if left to market forces alone, the major beneficiaries will mostly be the commercial medium and large farms that are accessible easily to ports and airports. Interior rural areas with bad roads and expensive transport systems are hardly part of the new high-value and liberalized agriculture.

7.2 National political economy drivers

As explained above, most government policies are reflections of the desires and dictates of external forces. Harmonizing the interest of external agents and that of internal priorities has often resulted in contradictions in which the different actors of the food chain have to negotiate carefully. Efforts by the state to modernise agriculture using a productivist model have always run counter to the rules of subsidies and openness to foreign imports of food. Smart subsidies operated over the years targeting fertilisers and hybrid seeds have responded to the criticisms of Structural Adjustment policies that decimated the food production sector (Jebuni 1995). Mechanisation as an important factor in any modern agriculture has constituted an important government objective with thousands of tractors and harvesters imported to propel the new green revolution. The Ghanaian state has played imported roles in the continent within the framework of CAADEP to revamp African agriculture. These have culminated in an improvement in productive infrastructure especially roads linking major market towns and cities and the promotion of a limited inter-regional trade in agricultural products.

However, the productivist model of agriculture silently prioritizes medium and large-scale producers to the neglect of smallholders who receive limited support. A class dynamic can be discerned in the process whereby the relevance of scale to the national criteria for modern productive agriculture promotes the interest of largescale farmers. Access to land has been made easier for larger and richer farmers over the years as the state succeeded in supporting the commodification of land through refining registration processes and supporting different types of land interest (Ahwoi 2010). The silent support of chiefs and family heads in disenfranchising community members by leasing land to able renters leads to aggregation of land into sizes far above the traditional farm sizes. The silent displacement of this trend is never discussed because it meets the objective of the state's modernised farm sector. Though a threat to thousands of smallholders, it is an opportunity for smallholders who are accumulating wealth and stepping-up in a diversified agricultural terrain. Also, new investors in agriculture with the right finance from urban areas and also foreigners find the policy success in commodifying lands very useful in creating opportunities for wealth creation in agriculture. These policies have not significantly changed the traditional limited access that women farmers face in accessing secure lands. In some instances, the commodification has rather disenfranchised women of traditional access channels to land but opened up opportunities for only rich women who can compete in the commodified land markets (Tsikata & Yaro 2014).

Services to the agricultural sector has grown over the years through the state's encouragement of a private sector-led growth. All over the study sites, input dealers have mushroomed providing critical services to farmers of all sizes and persuasion. In the coastal and savannah zones, the tractor owners provide an important ploughing, harvesting and transporting role to the agricultural economy. These have increased the avenues for sustainable investments in agriculture compared to the state provision of these services in the 1970s which were normally bedevilled with corruption and enormous inefficiencies. Beyond the technical service sector, the financial sector

is an important as organisations and individuals fund farmers activities in return for interests' payments in kind or cash. The government policies for agricultural finance is however still deficient in reaching smallholders as most initiatives continue to target largescale farmers, export producers and farmers in special schemes. A major threat is the failure to produce an architecture of finance that runs independently of state control with enough incentives and guarantees for financiers and farmers.

The rights of farmers are being increasingly eroded in a globalised food system. The attempts to introduce control over the production and sale of seeds in the form of the Plant Breeders Bill with mathematical certainty pose a huge threat to smallholders whose marginalization and exploitation will deepen. Our interaction with farmers and other food system actors show that production is not the major problem of the Ghanaian food system but rather, storage and marketing and the effect of seasonality, which processing can deal with effectively with the right policies that encourages investments in this subsector. The combination of scientific and local knowledge has proved very useful in maintaining the production part of the Ghanaian food system. This is not to suggest that more efficiency cannot be made in the production process. For instance, as production pressure increases, the need for more intensive production systems with higher yields is necessary.

The politicisation of agricultural policies in Ghana by the two dominant political parties has created discontinuities in programs and often derailed nascent successes achieved in the past which critically needed continuity. The abandonment of flagship programs is a major drain to the country's resources. The presidential special initiatives that were meant to link agriculture to processing units was a good initiative that needed time to grow, mature and stand up to the already developed Western and Asian processed food sectors. These were abandoned with millions of dollars in investments lost. Also, the development of local hybrid seeds by national research centres though recognised and supported is being short chained by the importation of foreign seeds. The introduction each time of different brands of tractors and farm machinery destroys continuity and the possibility of local fabricators to specialise and understand specific technologies. Naïve and ill-conceived big projects have also consumed huge chunk of the tax-payers' taxes and increased the country's debt burden without contributing in any way to the agricultural development of the country, but certainly gained the political party some initial popularity. Though the state has professed to support the private sector in the direct economic activities, the new Public Private Partnerships are allowing the state to misdirect national resources which could have gone to support smallholders in land management, marketing, and diversification.

7.3 Urbanisation and Demographic changes

Ghana's population is increasingly becoming urbanized with a near 50/50 rural-urban residence ratios. The demand for food has been increasing due to the pressure of a few producing for an expanding market and also due to increasing incomes of urbanites. Subsistence norms logically need to be replaced by commercial ones in order to meet this increasing demand. Also, the release

of rural lands due to rural-urban migration enables cash crop motivations in production as opposed to subsistence.

The increase in imported food prices over the past ten years has combined with the huge urban demand for food in making agriculture in rural Ghana profitable. Rural investments in food crops as opposed to export cash crops is increasing. The case of Eastern Region where plantain is considered a viable alternative to cocoa and oil palm attest to the growing internal market for local food crops. Rice production in the Volta and Northern Regions especially of Jasmine and other white rice varieties in the presence of good milling facilities is also taking advantage of the huge demand in rice consumption.

Ghana's rapid economic growth over the past ten years has led to rising incomes mostly urban based growth interacting with globalised networks. The economy is a trade-dependent one with low industrialisation and a growing service sector. Urbanisation in the context of changing food norms have implications for diets. Though increasingly, the urban population is consuming more livestock and dairy products, fats and oils and vegetables, the importance of staples in their diets is still overwhelming as demonstrated in section six of this report. Opportunities are therefore very high in the Ghanaian food chain to meet the meat and dairy needs which are currently mostly imported as local production is limited. Income growth and urbanisation poses both a threat and opportunity to local food systems as they sway consumers to global imports, but still creates markets which can propel a local production system given the right incentives and competitive atmosphere. Food safety concerns can gradually sway more urban consumers to consuming local meat products though prices are uncompetitive. Hopefully, the geographical limitation posed by transporting eggs may lead to growth of the local poultry industry which is decimated by foreign imports of cheaper competitive products from the EU, USA, Brazil and South Africa.

The growth of supermarkets especially the economic reach of South Africa is taking advantage of the urban market and introducing westernised patterns in the food system. The compatibility of these chains with local food systems is shaky as most products are imported from the countries of origin of these chain stores. Also, the poor processing tradition of Ghanaian food sector imposes limitations on its success in joining the new supermarket tradition which is used by the urban middle classes who are getting used to standardized products. Though, economists argue for the vertical integration of farmers to such firms, it is not always the case that farmers benefit from such relations as they constitute inferior partners as compared to existing open markets.

The fact that most urban Ghanaians are of a stock of rural migrants has slowed the shifts in diets to westernised ones. The consumption of local foods is still high despite the cumbersome preparation procedures. It is doubtful if this resilience of local food consumption will continue with the taking over of the urban space by a second generation of non-rural migrants. Given the hectic rhythm of life in urban areas, the shift to faster foods and already cooked and processed foods will dominate. This trend can be an opportunity for local food systems if processing firms take root fast enough. Without the necessary push by the state, it is doubtful if the auto-potential

within the private sector can meet the quality and scale requirements of this revolution. An example is the flour processing sector which is still rudimentary dating back to the 1960s without much adaptation when urban demand for good quality flour for the local dishes is very high. Yet, the magnitude of post-harvest losses is overwhelming as seen in section 3, 4 and 5. The new impetus to Ghana's agricultural revolution lies in cities and not rural areas, as the entrepreneurs needed to bring about these transformations must have the right urban mentalities and understandings and most critically, the right finance for investments and political influence to facilitate the change.

Opportunities for local food diets will increase with improvements in food preparation technologies. Recent developments in fufu making machines have reduced the drudgery in pounding fufu and helped with extending its availability. Also, experiments at processing local foods and developing new ways of easy preparation have been underway for over twenty years but have not reached a wider acceptance. Banku, TZ, Akpele and fufu powder are processed by a few small companies but the clientele is still limited to Africans abroad and a few restaurants and urbanites in Ghana. Issues of taste and texture need refinements to make these more widely acceptable. When these processing and marketing issues are dealt with, there will be significant multipliers throughout the food system with high employment possibilities.

The growth in population and changes in the country's demographic structure has led to mounting pressure on its landed resources for food and energy. The main driver of extensification and intensification in agricultural production is population growth which combines with rising incomes to increase production pressure. A younger population is also defining the type of food preferences and therefore changing diets. The ease with which Ghanaians are accepting new diets is related to youthfulness, education and lifestyle changes.

The demographic shifts to urban areas as the population increases further complicates the dynamics of food demand with wide-reaching ramifications for the food systems. If appropriate modifications through technological innovation is applied, it has great potential for wealth creation.

7.4 Environmental change

Biophysical changes are the most influential in defining the elasticity of production potential for all crops and livestock. These changes can be categorised into global and local environmental change. Of serious concern over the past thirty years is global climatic change which has serious ramifications for local climate systems which in turn defines the food systems of local communities and nations.

The productivist approach to agricultural development over the years has increasingly degraded landed resources of forest, water bodies and soils. The productivity of many soils is far lower than in the past and may not yield much without artificial fertilisation. The farmers in all ecological zones complained of poor and falling soil fertility due mainly to increasing population which does not allow fallowing, the use of fertilisers which they claim impoverishes the soil, and lack of

organic matter due to devegetation and agricultural extensification. Increasing population and higher per capita consumption in Ghana has led to increases in farmlands into marginal areas over the years.

The movement of farmers to different ecological zones which still have good conditions for cultivating particular crops such as the farmers from the north invading the middle belt for yam farming is common. The same applied to migrant cocoa farmers from the Eastern region into the new frontier zones of the Western Region. Also, some crops take over lands that were previously used for others such as cassava for maize, sorghum for millet, fruits for cereals etc. Farmers decision for substituting crops is first defined by the changing suitability of land and then complimented with a demand-driven motive. Where profitability is high, farmers will rather use more inputs of organic and inorganic fertilisers and irrigation to offset the impacts of land degradation. Therefore, the importance of state investments in agricultural infrastructure, markets, and technology become relevant in adapting to biophysical changes. Input availability and prices define what farmers do and the yields achieved at the production level. Input prices are rising steadily as more farmers adopt these. Except where these are part of state subsidy programs such as the fertiliser subsidies of the past government and the Planting for Food and Jobs by the current government. Many smallholders selectively apply inputs.

The climate has become topical in Ghanaian agriculture as farmers in all ecological zones are bearing the brunt of climate change. Interestingly, farmers in the Eastern Region of the rainforest complained most about the changes and adaptations they are making to their farm operations and livelihoods. Rainfall and temperature have become the two most important climatic elements driving changes in the food system. The coastal and the northern zones have the most visible changes caused by climatic change with manifold local climate variability and climate related disasters. The limitations these pose to crop yields leads to irreversible loses for smallholder farmers. Adaptation to climate change is rife among all categories of farmers although critical determinants such as poverty, appropriate technology, irrigation facilities, and input/output prices filter the effectiveness of adaptation strategies. Farmer choices based on crop varietal performance in the midst of weather uncertainty not only defines market availability of these crops, but also requires importation to meet shortfalls. The increasing inter-regional trade within Ghana is attributable partly to changing seasons and specialisations by farmers in different ecological areas. The threats posed by climate change can be opportunistically harnessed through a nationally coordinated system of targeted adaptation measures helping farmers, traders and transporters to complement each other in the production and circulation of farm produce.

7.5 Local social drivers

Each society has traditionally fashioned their food habits over time. However, these food habits and preference are changing due to urbanization, globalization and changes in crops grown. Rural areas in Ghana are experiencing much slower rates of change in diets compared to urban areas. Eating local and a sense of attachment to traditional dishes explains the slow changes in rural

Ghana, while education, global imports, global interconnectedness of the urban middle classes, fast rhythm of life demanding fast food, and other factors account for growing diet diversity in urban areas.

The consumer survey showed a pretty good picture of an overwhelming number of urban Ghanaians eating diets composed largely of crops from local production. Rice is the only imported food item that recorded high consumption. Seasonally, vegetables and the tomato fruit were also imported to meet shortfalls due mainly to climatic patterns and to a lesser degree taste and packaging. Dietary patterns are predefined by cultural preferences whereby fufu dominates in the forest zones where tubers and suckers abound; TZ in the Savannah where cereals are mainly produced; and Kenkey, Banku, and Akpele foods in Coastal Savannah where both cereals and cassava are common. However, the history of migration has nationalized fufu, Banku and Kenkey. Rice has become more popular among the younger generations. The ease of cooking and versatility of rice has made it compatible with modern hectic lifestyles. Also, the dumping of rice in the 1980s enabled by overproduction and food buffers in the USA made its easy entry into the ordinary Ghanaian's kitchen. Today, even though prices are rising rapidly, consumers are already accustomed to rice consumption and continue to purchase and consume it. Government efforts at developing the rice valleys in the country is complemented by farmer's adaptation and response to profit incentives. Opportunities for growing long grains through more skills and technology transfer and milling facilities will grow the rice sector in Ghana and save the country of millions of dollars in rice import annually.

A fast food culture in urban Ghana mimicking the trends in western world of hamburgers has been underway for two decades now. Fried rice is the main fast food with a ubiquitous presence in all of urban Ghana. The growth in fast food chains is not from multi-national corporations, such as McDonald's, but rather from domestic firms (such as 'On the Run'; Southern Fried Chicken; Chinese and Turkish restaurants – many are foreign owned) and numerous small petty food traders with less than 200\$ operating capital that copy the products and operational procedures of the foreign companies.

In line with global trends, these fast foods are served with the cheaper chicken from the EU, Brazil and South Africa. At the consumption stages of the food system, these have raised serious health issues of obesity and other lifestyle related hazards. A competitive atmosphere has been imprinted between rice and noodle fast food joints and traditional chop bars serve local dishes. The convenience afforded by packaging of rice, chips and noodle fast foods is a growing threat to local diets.

Opportunities are therefore opened to rice farmers and diversification into rice farming given the good biophysical conditions of numerous valleys all over the country. Also, processing of local foods such as cassava, yam, cereals into noodles and flour for pastries should be encouraged to create linkages between the changing diets and local food production. The current reliance on imported fast foods is a disjoint and disarticulates local production systems. The rapid spread of

supermarket chains and fast food restaurants is reinforcing these trends. The growing urban demand and changing taste even among rural farmers for foods from other regions shows an irreversible trend away from traditional cereal/tuber diets to more diversified and commercialized systems, which can be carefully harnessed to improve the local food systems.

The increasing consumption of meat and dairy products is not met by the poor production capacity due mainly to low profitability in the subsector, and also to dumping by western nations. Local livestock production has not been given much policy concern as compared to crops. Cattle rearing is facing problems of conflicts in grazing because open access areas are being cultivated by crop farmers. The political ecology of cattle rearing in West Africa generally reflects different power asymmetries which ends up as a major threat to the growth of the subsector. A history of pastoralism in northern West African states accounts for a better picture than that of Ghana. Hence, a heavy reliance of Ghana on its Sahelian neighbours for livestock, to meet its fresh meat needs has persisted over the past three decades.

It has been noted that, with income growth, there will also be a significant shift into the consumption of high quality food products, for instance jasmine and Basmati rice, etc. (see Pintail et al., 1997). With a leap in Ghanaian per capita income from 400 USD in the 1980s to 1150 USD today (President's Independence Day speech, 6th March 2018), we expect not only strong demand for local foods but also shifts to high quality which may be imported products rather than locally produced. The trend worldwide is that as GDP goes up, the dietary patterns also move in favour of more processed foods, supermarket-based purchases, and eating out in restaurants.

7.6 Access to technology

Technological innovation diffusion in Ghana has been very slow in the past though improving in recent times due mainly to rising profitability of farming and state investment policies in agriculture. There has been an overemphasis on mechanisation in Ghana as the main form of visible technological development in agriculture. Since independence, President Nkrumah's government littered the country with Soviet tractors and harvesters and this has continued over the years.

Initial adoption of most technologies were very poor as subsistence norms were higher and commercialisation was limited while only traditional export crops had profitability levels capable of sustaining the cost of new technologies. However, the terrain has changed today as profitability and substitution of different input categories has made adoption of mechanisation services possible, desirable and profitable. Mechanisation is higher in non-forested Ghana such as the coastal and northern savannahs. In the forest savannah, the main technological change is in the use of modern crop cultivars rather than mechanisation. Interestingly, our Eastern Region respondents identified the knapsack sprayer as the only mechanised equipment used by all farmers. While in the savannahs, both rich and poor farmers used services of tractors, harvesters and processors. Investments in agricultural mechanization by the private sector especially by farmers themselves is a welcomed news. Wealth accumulation is visibility shown by ownership of tractors. Smaller

farmers were not disadvantaged by their poverty status from using tractors as the divisibility of mechanisation through innovative rental systems has afforded poor farmers the opportunity to quick cultivation, and labour-saving technologies.

An important driver of mechanisation technologies is the local metal fabrication industry composed of blacksmiths, welders, mechanics, tractor operators and simple designs from other developing countries. Our interviews indicated that NGOs, the FAO and UNDP have been instrumental in providing training programs to fabricators who make, and service imported units too. This approach has been a better catalyst than the state focus on importation of higher technologies with bilateral loans which often serve the interest of donor countries in selling and propagating their exports of machinery. Apart from large farms in the savannah, all itinerant tractor operators and processors have locally built units and older home-used Massey Ferguson and Ford tractors. Where are all the imported government tractors from India, China and Brazil? This was our main question to farmers? The politics of distribution and setting up of mechanisation centres seem to be all rhetoric and still possibly follows the old system of hijacking of state support by party loyalists, influential farmers, local elite and chiefs (focus groups in BA and NR).

The Ghanaian state can be praised for the rapid adoption rates of hybrid seeds throughout the country. Even though, most farmers are not buying certified seeds which obviously reduces their yield capacities, they are using the varieties generated from the research institutions and funded by the state, by buying from open market sources. Free distribution of improved seeds is a sure way to enable broader access and use of these achievements (PFAG 2016). A silent green revolution has been underway in Ghana without the important component of water. Irrigation is still underdeveloped and bedevilled with challenges of management, inappropriate systems, and financial viability of large centralised systems. Opportunities however abound for small scale irrigation due to the high-value crops of tomato, water melon and vegetables. All over the country, valleys are being invaded by small farmers with land values also rising due to the possibility of irrigation served mainly thanks to cheaper Chinese water pumps. The falling prices of solar energy and increasing availability of solar pumps could further these small irrigation systems and reduce the high cost of using diesel/petrol pumps.

Improvements in technology is an important driver of food system changes. We argue for a two-sided approach to technology development, diffusion and adoption. Locally developed appropriate technologies are more relevant than foreign ones for small farmers. Older foreign technologies are better suited than leap-frogging to sophisticated technologies without local technical know-how to repair and use them. Adoption of technology should be based on an emergent need rather than forced down on farmers to ensure sustainability. Small and appropriate technologies from Asia seem to be serving the needs of smallholders as shown by the use of the motorized tricycles and two-stroke powered harvesters in the Northern, Brong Ahafo and Greater Accra regions.

CHAPTER EIGHT: SUMMARY, RECOMMENDATIONS AND AN AGENDA FOR ACTION

This report is an overview of the Ghanaian food system highlighting interventions that can lead to increased opportunities and choice for Small Holder Farmers, drive sustainable production and create opportunities for off-farm employment. By reviewing the agricultural policies, we show how the state and the private sector can work synergistically to develop the sector through investments, institution building and innovation. The results of the research constitute a strong basis for farmers and other rural actors to carve a simple and realistic vision for change. This chapter presents the summary of the findings, and some policy and general recommendations; an agenda for action by OSIWA.

8.0 AGRICULTURAL SECTOR POLICIES

The agricultural sector plays a key role in economic development of Ghana, providing food, raw materials, foreign exchange and employment. Even though the sector lost its position as leading contributor to GDP to the services and industry, it is still the leading employer providing jobs for about 44.7% of the population. In Ghana, smallholder farmers dominate the agricultural sector as they produce 90% of food in Ghana. The Smallholder farmers are, however, confronted with systemic structural challenges ranging from difficulty accessing inputs, extension, finance, good markets, and suffer from high postharvest losses and climatic changes.

Historically, various governments have attempted to address these challenges through numerous programmes and policy reforms. Some of the reforms include: Kwame Nkrumah state led agriculture under the Seven Year Development Plan, Achampong Operation Feed Yourself and the Structural Adjustment Programme in the early 1980s'. In recent times, the country witnessed policy reforms through the Food and Agricultural Sector Development Policy I and II with the Medium Term Agricultural Sector Investment Plan (METASIP I, II, and III) to implement the policies. Unfortunately, the sector is still bedeviled with the same problems these policies and their strategies aimed at removing.

The recent introduction of the Planting for Food and Jobs (PFJ) programme aimed to increase farmers' productivity to catalyse structural transformation in the economy through increased farm incomes and job creation. This was hailed by most respondents for making fertilizer and seeds

available and cheap. However, most of the problems associated with previous programs are still rife such as provision of inappropriate inputs, poor quality, and inaccessibility by the poor, corruption, and hijacking by the powerful, alienation of women and youth and distribution at the wrong times. Just as previous programs, the non-prioritization of marketing and the over-emphasis on production still shows that the government is preoccupied with an older productivist discourse which requires technical fixes, rather than seeing the constraints of marketing which in a market economy constitutes the main driver of growth of sectors. Access to local and international markets and prevention of post-harvest losses seems to be silent domain of policy strategies.

The recently launched of “Planting for Export Rural Development” (PERD) with a focus on promoting selected cash crops continues to deepen our global reach but fails to recognize the huge internal potential for food crops. Though a good program in increasing diversification of exports and linking farmers in environments that previously interacted minimally with global markets, the consultative processes before its conceptualization should have been much deeper and geographically representative. Farmers in Techiman for instance, pointed to the consequences of a huge support for cashew and mango creating opportunities for commercial farmers to accelerate the grabbing of lands of smallholder farmers.

The policy direction and desires of the modern state are contradictory as they seek to help smallholder farmers and at the same promote strategies that disenfranchise them of land, land markets, and technology. This contradiction is born out of the productivist model which does not recognize that the smallholder since the colonial times has been responsible for the success of the agricultural sector, but rather aims to transform through modernization to medium and large-scale farming. A class dynamic emerges as the richer and well-connected influence policies and programs that are consistent with the states believe in modernization. We consider the love for large scale farming, the call for increasing use of biotechnology, naïve liberalization, and the heavy application of external chemical inputs, as misguided dimensions of Ghana’s agricultural policies that require a critical informed debate.

Building effective food systems needs leveraging the local production, distribution and consumption through coherent and holistic policies that build on existing strengths, creates new opportunities for new forms of employment, and reduces the weaknesses of and threats facing the national food systems. A holistic approach should consider the sector’s problems ranging from the

farmer, extension services, input suppliers, financial institutions, traders, transporters, hospitality industry and food venders and processors.

8.1 THE FOOD SYSTEM OF GHANA

The food system in Ghana comprises of activities from food production, through to consumption and back to farmers planning for production. The bulk of food in Ghana is produced by smallholder farmers located across the different ecological zones which offer the food variety the country enjoys. There are few large farms and increasingly many medium size holdings due to rising incentives from urban markets. However, Ghana is a net importer of a number of key agricultural products, such as rice, wheat, sugar and poultry (FAO, 2015). Ghana's food system has moved from its simplistic beginnings into complex ones with circuits linking global systems. These are mainly due to global interconnectedness, urbanisation, technologies, and population dynamics. The need for more efficient and sustainable food systems that satisfies both local demands as well as national and global context has become ever more important.

8.11 Food Production

A differentiated group of farmers in Ghana constitute the main actors in the production component of the food system. There is a high level of market integration aided by recent successes in the improvement of road infrastructure and access to technologies countywide. The main crops in the system include plantain, cassava, maize, pepper, tomatoes, groundnuts, maize, rice, soybeans, watermelon, and yam, okra, cassava, green pepper and cassava, and beans. The food production stage contributes to the majority of livelihoods of households in rural Ghana and accounts for food availability and access through its direct contribution to food and indirect contribution to incomes used for procuring food.

The smallholder farmers play a more active role in the production food in Ghana. Most of the farmers produce an average of two market food crops at the same time so as to maximise output from the land. Some farmers also practice mixed cropping as an insurance strategy to deal with crop failure and or marketing challenges. Also, since the farmers consume some of the crops produced, mixed cropping helps them to deal with their own food insecurity problems. Smallholder farmers in Ghana produce a variety of food for their own consumption and for sale into local and regional markets, thereby enhancing productivity, livelihood, food security and foreign exchange for the country. The major factors that determine the types of crops farmers produced are good ecological conditions (climate, soil etc.), ease of production, and marketability. Other relatively

less important factors include availability of inputs/government support, knowledge of production and low cost of production, and consumption requirements. The implication of this finding is that current government programmes that focus only on supplying inputs to farmers without helping them to market those commodities are bound to fail.

A significant proportion of farmers combine farming with other income generating activities, such as keeping of livestock, which is an important form of livelihood diversification as the livestock can be sold in times of crop failure or low prices for their farm produce. Some farmers reported that the livestock can sometimes be sold when they need money urgently for emergencies such as medical bills. Another major source of income is trading and casual labour. Straddling between wage employment and farming is an important livelihood strategy for many smallholder farmers and showed the best food security outcomes. The implication of these findings is that efforts to help farmers diversify income sources can leverage on already existing alternative income generating activities, such as keeping of livestock, trading, and casual labour.

Support to smallholder farmers in Ghana is still very low. A majority of farmers do not benefit from government support. Only a few farmers received support in the form of extension services and credit from the government. While the planting for Food and Jobs Programme is supposed to help farmers get access to input, only a small proportion of farmers benefited from this programme. The proportion of respondents who benefited from this programme is higher among male farmers than female farmers. This means that there must be conscious efforts by policy implementers to target women and also the youth. Other challenges facing smallholders include lack of access to credit and insurance; low access and poor quality and access to inputs; high cost of land; cost and poor access to farm mechanisation; inadequate extension services; pest and disease infection; post-harvest losses; marketing; storage facilities, and transportation cost.

Government programmes that aim at encouraging the cultivation of specific crops must also consider challenges that will emerge in marketing, storage and processing, rather than merely providing inputs. Providing incentives to the private sector to set up processing of food, especially financial and organisational support to local processors and linking farmers to these food processing firms should be the focus for donor and the state.

We therefore argue that the livelihoods of smallholder farmers can be substantially improved if the government and the private sector work together to support the smallholder farmers by improving rural infrastructure and supporting off-farm activities. The current ‘unintended’ focus

on medium and large scale farmers is not appropriate as smallholder farmers still produce a significant proportion of food in Ghana.

8.12 Food distribution

The drivers of marketing and food distribution are market agents (market queens, itinerant traders, retailers and transport operators). They play a dual role in supporting farmers with production resources and at the same time play a leading role in food marketing and distribution. While some marketing agents claimed farmers are unreliable, the farmers on the other hand perceived market agents as exploitative. According to the farmers, market agents overweigh their produce, offering low prices and on some occasions, failed to pay for products purchased from farmers on credit. The role of market agents is indispensable in food system of Ghana. While the role of market agents is crucial in food distribution and marketing, they are constrained by poor road infrastructure, inappropriate transport facilities, extortion and harassment by the police on the highways, and high levels of perishability.

Transportation is the main grease for the food system ensuring the movement of people and goods from farm gate to markets and inputs to farms. Most of the inefficiencies of the food system in Ghana emanates from the poor transport system and its governance. The poor state of roads between farm villages and the nearest towns and the non-existing roads and tracts from farms to villages is a major challenge. This leads to high cost of transport and high rates of perishability along the chain of distribution. Police harassment of vehicles transporting food produce is a major impediment to the food system with negative multipliers to the entire agricultural sector.

The distribution sector has the highest potential for providing jobs, generating value addition and higher incomes, thereby ensuring poverty reduction. An effective food distribution network propels rural development through multipliers such as processing, packing, advertising, transportation and storage.

8.13 Food Consumption

The “demand side” of the food system is defined generally by price, location, consumer preferences, knowledge, tastes, cultural habits, and perceptions. These factors are in turn influenced by higher level trends and processes such as demographic changes, economic changes, globalization, urbanisation and migration. We argue that as the population of Ghana increases in number and quality in terms of education and changing attitudes, so too will their diets and attitudes towards traditional and new dietary formulas from other regions and countries.

Eating locally produced food is an important characteristic of food consumption landscape as cultural affinities define local food dishes in the regions. Except for the capital city whose populations are very diverse, and agriculture is of less importance, which therefore makes reliance on food from other regions more important. The source of food for most Ghanaians is therefore from their own regions and then other regions. The consumption of imported foods is limited to a few set of products, mostly meat and dairy, vegetables and rice, which is reflection of poor national capacities and seasonality. Though imports may constitute a small percentage of food consumed per household, it is nonetheless growing in importance and putting a strain on the country's food import bills.

The consumption of food in Ghana is socio-culturally differentiated. The ecological distribution of food production coincides with consumption of particular foods such as millet, maize and yam in the north, then cassava and plantain in the eastern region, and maize and cassava, in the Brong Ahafo Region. Rice is fast becoming a main dish in Ghana. There is predominance of consumption of locally farmed foods which is important for the sustenance of local production. Meeting stiff competition from globally produced foods will require processing, packaging and most importantly good quality. The missing link in Ghana's food system is therefore food processing which will take care of postharvest loses and changing customer demands.

Gradually, quality and food safety are emerging concern to consumers. Quality has led to dramatic shifts of those who can afford to imported foods. A competitive atmosphere has emerged where farmers within same region compete with themselves, then with other regions and then also with foreign imports. Consumers are becoming discerning, sophisticated and therefore may shift allegiance from locally produced items to others that provide better quality and safety guarantees.

There is the need for improving on processing, packaging, transportation of food products in Ghana to provide the quality needed by the ever-demanding consumer. These activities belong to agro-based industries who need state support to thrive. The role of policy in directing and facilitating investments in post-harvest activities and transportation is critical as the open market is slow in activating investments in unknown and perceived risky areas.

8.2 DRIVERS OF CHANGE OF THE FOOD SYSTEM

Ghana's food systems are shaped by several global, regional and local drivers operating at different levels. Generally, rapid economic and income growth, urbanization, and globalization are leading

to dramatic changes in demand patterns and diets translating into food system changes. Global forces ranging from environmental, cultural, political to economic play significant roles in re/structuring the opportunities and threats that direct the changes in local food systems. Locally, both environmental, social and economic dynamics continue to drive changes in the planning decisions of farmers, traders and consumers along the food chain.

The orientation of Ghana's economy towards more openness that links farmers to global vertical market networks integrates our economy with the flexible world of investments argued to bring the prosperity badly needed by the poor. A global network of agricultural commodity and input trade has deepened the commercialised landscape of agriculture in Ghana. These should open up opportunities for smallholder farmers to access lucrative foreign markets. However, these assumptions have not always led to these intended outcomes but negative ones that marginalize smallholders. The major beneficiaries of the lucrative foreign markets are mostly the commercial medium and large farms. Interior rural areas with bad roads and expensive transport systems are hardly part of the new high-value and liberalized agriculture.

At the national level, efforts by the state to modernise agriculture using a productivist model greatly influences the production, distribution and consumption stages. Smart subsidies operated over the years targeting fertilisers and hybrid seeds have and the mechanisation drive has made some significant inroads in the diffusion of modern technologies. Working within the framework of CAADEP to revamp African agriculture, Ghana has seen massive improvement in productive infrastructure especially roads linking major market towns and cities and the promotion of a limited inter-regional trade in agricultural products. However, the productivist model of agriculture silently prioritizes medium and large-scale producers to the neglect of smallholders who receive limited support. A class dynamic can be discerned in the process whereby smallholders lose out in the sharing of the national cake. Access to land has been made easier for larger and richer farmers over the years as the state succeeded in supporting the commodification of land through refining land registration processes and supporting different types of land interest. The silent displacement of poor farmers, women and the youth is hardly discussed because it meets the objective of the state's modernised farm sector.

Ghana's population is increasingly becoming urbanized with a near 50/50 rural-urban residence ratios. The demand for food has been increasing and imposing new production pressures which are important opportunities for farmers. These are the major drivers of agricultural

commercialisation in Ghana. The inability of local production to meet this demand led to increases in food imports. However, rising imported food prices over the past ten years has combined with the huge urban demand for food in making agriculture in rural Ghana profitable. Rural investments in food crops as opposed to export cash crops is increasing. In addition to the size of the population, the incomes of Ghanaians have risen dramatically over the past thirty years which increases the demand for better quality food. Food imports tend to have better quality than locally produced foods. This calls for a crusade to improve local food quality, processing and packaging dramatically to prevent the leakages out of the national food systems. Given the hectic rhythm of life in urban areas, the shift to faster foods and already cooked and processed foods will dominate. This trend can be an opportunity for local food systems if processing firms take root fast enough.

Biophysical changes are the most influential in defining the production potential for all crops and livestock. Production pressure over the years has led to significant resource degradation. The productivity of many soils is far lower than in the past and may not yield much without artificial fertilisation. Climate variability and climate related disasters have become a major driving force of food system changes. Adaptation to climate change is rife among all categories of farmers although critical determinants such as poverty, appropriate technology, irrigation facilities, and input/output prices filter the effectiveness of adaptation strategies. Farmers decision for substituting crops is first defined by the changing suitability of land and climatic conditions and then complimented with a demand-driven motive. Therefore, the importance of state investments in agricultural infrastructure, markets, and technology become relevant in adapting to biophysical changes.

Local food preferences and culture are the critical drivers of food systems. Each society has traditionally fashioned their food habits over time. However, these food habits and preference are changing with time and especially due to urbanization, globalization and changes in crops grown. Eating local and a sense of attachment to traditional dishes explains the slow changes in rural Ghana, while education, global imports, global interconnectedness of the urban middle classes, fast rhythm of life demanding fast food, and other factors account for growing diet diversity in urban areas. Opportunities for growing long grain rice through transfer of skills, irrigation and modern milling facilities abound.

Technology is one of the most important drivers of change in all sectors. Its diffusion is as a result of a complex array of factors as already shown above where policies, politics, demand, population,

culture and nature define the innovation-diffusion process. Though the use of technology is generally low, we argue that farmers are using the technology appropriate to their circumstances. Locally developed appropriate technologies are more relevant than foreign ones for small farmers. Older foreign technologies are better suited than leap-frogging to sophisticated technologies without local technical know-how to repair and use them. Adoption of technology should be based on an emergent need to ensure sustainability. Small and appropriate technologies from Asia seem to be serving the needs of smallholders as shown by the use of the motorized tricycles and two-stroke powered harvesters in the Northern, Brong Ahafo and Greater Accra regions.

8.3 RECOMMENDATIONS

Given that several agricultural policies in Ghana failed in transforming the agricultural sector and also that most of the policies favoured large and medium scale commercial farmers, **future policies should deal specifically with different scales/levels of farmers** rather than lumping all of them together as an undifferentiated category. This is possible through proper consultancy of geographically disaggregated farming communities. Though a complex process, a class analysis and response to different farmers needs are critical they enable the right targeting of poor women, very small farmers, smallholders who are stepping up and stepping out of farming, and the youth who are new actors required for the sustainability of farming in Ghana.

Ghana's agricultural policy needs to **navigate carefully the neoliberal global trade regimes**. Smart government policies need to necessarily incorporate aspects that reduces the threats of international trade and its rules and regulations on Ghana's agriculture. Aligning our domestic policies to enable further exploitation must be stopped. We need to align with international capitalism in a manner that allows us derive benefits, take advantage of opportunities, and reduce the threats from predatory global actors. The development of vertical networks with supermarkets and their marketing agents need regulation from the national level that seeks to help both farmers and firms purchasing. Policies dealing with trade are needed to help streamline the exploitative arrangements that enslave small local producers.

The lopsided approach of the productivist model of agriculture which prioritizes production at the expense of marketing, food safety and environmental degradation needs to be changed. A **holistic approach** is needed which recognises the need to protect the environment and ensure sustainability of production; food safety through the appropriate use of pesticides, herbicides, storage media and food handling; and incorporate activities of processing and marketing.

The study shows that local demand for local food is very high, but supply is seasonal with oversupply during harvest and scarcities during the lean season. The government's one district one factory policy on **industrialisation should be focused on agro-based industries**. There are already examples of small processing units experimenting in processed products for the making of Fufu, Banku, t.z, etc. which we can upscale. Processing of perishable products and the production of processed foods for local dishes has been researched into copiously by graduate students and scientists. These reports are wasting on shelves in the universities and in other research institutions. The needed policies to grow such an industry needs to span the energy, taxation, transport, and technology transfer. Governments striving to overtax their industrial sector which already faces a high cost outlay will certainly destroy any potential to grow the agro-based industries.

Growing local industries and encouraging majority shareholding in processing industries by Ghanaians is an important modification to the hegemonic foreign investment discourse which seeks to continue the surplus value appropriation and the exploitative relationships inherent in current global capital investments. Though scale may be important, the examples from southern Europe of the viability of small agro-processing factories producing unique products with specific geographical attributes means that many medium sized investments will survive, thrive and bring about regional employment benefits, in comparison to mega projects often the preference of government and donors.

Government policies on **public private partnerships** needs serious reforms as they are not a panacea for stopping waste, corruption and poor resource allocation. Based on past PPPs in which the state has lost lots of money and may even be sued with accompanying judgment debts, we argue that the state should limit their contribution to producing a liberal environment for the operation of private investors. Given the fact that even the small illiterate farmer is able to respond to market incentives in planning their production, the educated well connected local investor will do even better when the state brings its various Ministries together to create a unified system that removes the frustrations facing young industrialists.

Policy strategies must be well thought out since policies themselves may not achieve their objectives without the actionable strategies and needed commitments. An important marketing strategy is the mandatory use of local produce by all government institutions and institutions funded by the state. We need an 'Eat Ghana Act' which makes sure state resources are only used to purchase locally produced food items. Also, policies on marketing can consider a quota system

that mandates hospitality industries and high valued markets to purchase a given quota of their wares from the local producers.

Qualitative strategies such as **building farmer capacities to deal with quality and food safety** needs to be encouraged especially by the state, NGOs, the Donor community and farmer-based organisations. The training of farmers on quality and standards to improve on the quality of their products has been achieved by the export industry in the past. It is therefore doable. Nationally, the Ministry of Trade and Industry can have a system of certification of Farmer Based Organisations products so as to enable them take advantage of the growing supermarket sector, and also meet the complex urban customer's needs.

The government **Planting for Food and Jobs program needs a careful review** that incorporates the voice of the farmers so as to design regional packages that fit the needs and concerns of specific groups of farmers. Also, the quality of seeds and fertilizers under the Planting for Food and Jobs should be improved, while timely delivery of the inputs must be made. We argue for timelier, affordable and good quality inputs made available in all geographical jurisdictions. In order to make fertilisers more accessible to distant rural farmers, the government should facilitate the setting up of fertilizer distribution shops to serve clusters of communities thereby reducing distances covered to buy both market and subsidised fertilizers. The program should include postharvest activities as marketing, processing, transport, and storage.

Distributional challenges negate all the gains made from investments in production. A focus on **addressing marketing and distributional challenges are of utmost importance**. The state should invest in feeder roads, transport facilities, storage facilities and food processing. This will ensure all year-round food availability. The market agents are the main actors in food production and distribution whose activities should be incorporated into the sector wide programmes. These programs can be geared towards building genuine non-exploitative and good relations between market agents and farmers. The creation of access to both domestic and foreign markets for farm output should be part of any effort at agricultural development.

Supporting the development of **diverse forms of simple irrigation systems** will not only increase production, but also deal with seasonality and employment generation. This should involve sharing knowledge on these systems, providing new crop cultivars, removing taxes on imported components, providing support for expensive infrastructure such as dams, wells, boreholes, solar powered pumps, etc.

The governance of transport systems needs an overhaul, especially in dealing with the activities of the police on all highways. Some minimal necessary requirements should be demanded from transport operators and few specific check points should be mandated to randomly check these rather than the current system of every police barrier stopping trucks with loads and demanding all kinds of documentation. This will make transport operators operate lawfully and reduce the cost of transport and huge post-harvest losses associated with the waste of time.

The findings underscore the **need for credit facilities** along the entire value chain. Developing a framework that brings NGOs, banks and the state for the provision of accessible and affordable credit facilities to farmers, traders, transporters, input dealers and processors at all levels. These actors need education on financial management to enable sustainability of these programs.

The government and its development partners should also **enhance extension services** to many communities in Ghana. The private sector can be involved in extension services. Extension officers must also be provided with required resources needed to function properly. As argued elsewhere, Ministry of Food and Agriculture should promote the use of mass extension method, such as farmer field school, nucleus farms with outgrowers, extension field days, demonstration of newly released varieties, mass communication through radio and television, communication vans and dissemination through farmers groups. The extension services should be trained in several other areas such as finance, marketing, technical and their normal agronomic roles.

Farm mechanisation challenges can be managed by the state **facilitation of tractor availability using tax incentives** and lobbying companies into the Ghanaian market with regional sales points. The state should then provide the financial guarantees for farmers and farmer groups to purchase these at affordable prices based on geographical equity principle. Machines that have proven to be useful in rural areas should all be given tax reliefs such as the tricycle and harvesting and processing machines. Local fabricators of farm machinery need further training and better designs to develop locally specific machines instead of always having to import sophisticated machines which will be under-utilised and abandoned with the slightest fault.

8.4 AN AGENDA FOR ACTION FOR OSIWA

A. INTERVENTIONS

1. Design insurance systems for farmers and pilot a scheme.
2. Design flexible credit systems for uptake by financial institutions and the state
3. Advocacy for the government and donors to change policy practices that harm small holder farmers
4. Support female and young farmers in producing and marketing one specific market crop in each ecological zone
5. A campaign for inorganic fertilisers – skill training for self-production and encouraging wider usage.
6. Showcase simple cheaper technologies for cultivation, harvesting, processing and storage – import prototypes for use in demonstration farms established by PFAG and their members.
7. Hold an investors forum for agro-industrialisation linking local and foreign processors and technology developers.
8. Extension service support – better holistic knowledge in farm and food systems.
9. Support the ministry of trade and registrar general department to design labels that certify product quality for FBOs and specific farmers. This should also involve the consumer cooperatives in inspection and testing of products using facilities of Food and Drug Boards and the Ghana Standards Board at the national cost.
10. Advocacy that redirect government investment in production to include or focus more on promoting food distribution. This will include improve feeder roads, food processing, transportation, marketing and postharvest losses.
11. Advocacy for application of ICT to improve food postharvest management and food distribution. This will target the youth and young graduates for job creation.
12. Train farmers on alternative income generating activities to help them diversify income.

13. Design and implement strategies for dealing with environmental hazards.

B. FURTHER RESEARCH

1. Assessment of the achievements and challenges of Ghana government's new flagship program, thus, the Planting for Food and Jobs. Our data indicated that there are serious conceptual and practical challenges with the current programme. A larger study that focuses on the achievements, challenges and aspirations/desires of farmers in various parts of the country is in the right direction now than latter.
2. Social transformation and livelihood diversification in rural Ghana: The current state of social transformation in rural areas has not been adequately explored nor understood. This is the new agrarian question Africans should be grappling with seriously.
3. Pesticide, herbicide and fertiliser misuse among farmers – there is the need to understand the magnitude of the problem; its causes; design solutions via workable soft solutions.
4. Appropriate technologies for small farmers – catalogue these; investigate the need; explain the role they play; detail the actors and drivers; how do we refine older ones, introduce newer ones and make them acceptable?
5. Impact of government agricultural subsidy programmes, specifically, seeds and fertilizer subsidies on access, productivity and poverty reduction. The results can provide opportunity to recommend alternative policies or strengthening of the existing food and agricultural policies. This could be limited to Ghana or other West African countries that OSIWA supports.
6. An assessment of some flagship programs by OSIWA in West Africa or only in Ghana. To what extent these flagship programs achieved their objectives and the impact on the beneficiaries. We will be interested in projects which focused on food security, environmental sustainability including climate change, education and capacity development in West Africa. This will involve engaging all beneficiary institutions (NGOs, CSO's, public institutions and the academia as well as indirect beneficiaries). The information will be relevant for OSIWA's future investments.

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APPENDICES

Appendix 1: Farmers' ranking of main food crops cultivated in Greater Accra in order of importance

Crop		Rank		
		1	2	3
Cassava	N	1	3	10
	%	1	3.5	23.8
Pepper	N	16	46	11
	%	16	54.1	26.2
Tomato	N	73	15	4
	%	73	17.7	9.5
Watermelon	N	10	21	17
	%	10	24.71	40.5
Total	N	100	85	42
	%	100	100	100

Appendix 2: Farmers' ranking of three main crops cultivated in Eastern Region in the last 12 months

Target crop		Rank		
		1	2	3
Cassava	N	4	20	12
	%	4	20.6	14.5
Garden Egg	N	5	13	12
	%	5	13.4	14.5
Maize	N	9	9	28
	%	9	9.3	37.3
Pepper	N	34	21	12
	%	34	21.7	14.5
Plantain	N	32	17	10
	%	32	17.5	12.1
Tomato	N	16	17	9
	%	16	17.5	10.8
Total	N	100	97	83
	%	100	100	100

Appendix 3: Farmers' ranking of three main crops cultivated in Brong Ahafo Region in the last 12 months

Target Crop	Rank			
		1	2	3
Cassava	N	11	24	25
	%	11	26.09	36.76
Maize	N	43	34	10
	%	43	36.96	14.71
Pepper	N	2	6	15
	%	2	6.52	22.06
Tomato	N	4	9	5
	%	4	9.78	7.35
Watermelon	N	17	11	3
	%	17	11.96	4.41
Yam	N	23	8	10
	%	23	8.7	14.71
Total	N	100	92	68
	%	100	100	100

Appendix 4: Farmers' ranking of three main crops cultivated in Northern Region in the last 12 months

Target crop	Rank			
		1	2	3
Groundnut		53	22	5
		53	29.73	12.82
Maize		32	38	3
		32	51.35	7.69
Rice		8	5	12
		8	6.76	30.77
Soyabean		6	6	11
		6	8.11	28.21
Watermelon		1	1	3
		1	1.35	7.69
Yam		0	2	5
		0	2.7	12.82
Total		100	74	39
		100	100	100

Appendix 5: Target Crop and Region

Target Crop and Region																								
Indicator (%)		Greater Accra				Eastern						Brong Ahafo						Northern						
		CA	PP	TT	WM	CA	PP	TT	GE	MZ	PL	CA	PP	TT	WM	MZ	YM	WM	MZ	YM	GN	RC	SB	
Reasons for choice of crop																								
Ease of production %	N	9	12	68	41	4	1	2	1	16	13	131	2	0	3	34	1	0	7	0	10	5	2	
	%	32.1	9.7	33.3	36.3	4.6	0.6	1.7	1.2	13.1	8.4	8.3	3.3	0.0	3.7	14.5	0.9	0.0	4.1	0.0	5.5	8.1	3.4	
Good climate (/soil/land, weather) %	N	8	32	37	14	33	56	33	24	36	48	46	19	15	24	53	37	5	68	7	65	19	18	
	%	28.6	25.8	18.1	12.4	38.4	31.3	28.2	28.3	29.5	31.2	29.5	31.7	28.8	29.6	22.5	34.6	38.4	39.3	46.7	35.9	30.7	30.5	
Ready market %	N	7	62	80	45	8	46	31	25	19	30	23	15	15	25	35	25	2	16	2	22	9	11	
	%	25.0	50.0	39.2	39.8	9.3	25.7	26.5	29.4	15.6	19.5	14.8	25.0	28.8	30.9	14.9	23.4	15.4	9.2	13.3	12.2	14.5	18.6	
Available inputs/gov't support %	N	0	2	3	1	1	6	3	4	6	1	5	1	7	3	7	2	0	16	0	6	2	3	
	%	0.0	1.6	1.5	0.9	1.2	3.3	2.6	4.7	4.9	0.7	3.2	1.7	13.5	3.7	3.0	1.9	0.0	9.2	0.0	3.3	3.2	5.1	
Knowledge in production %	N	2	7	11	7	30	47	26	20	32	46	35	15	8	17	47	20	2	53	3	46	19	8	
	%	7.1	5.6	5.4	6.2	34.9	26.3	22.2	23.5	26.2	29.8	22.4	25.0	15.4	21.0	20.0	18.7	15.4	30.6	20.0	25.4	30.6	13.6	
Low cost production %	N	1	1	3	4	4	0	1	0	1	1	18	3	0	0	29	3	4	11	3	32	7	17	
	%	3.6	0.8	1.5	3.5	4.6	0.0	0.9	0.0	0.8	0.7	11.5	5.0	0.0	0.0	12.3	2.8	30.8	6.4	20.0	17.7	11.3	28.8	
Others %	N	1	8	2	1	6	23	21	11	12	15	16	5	7	9	30	19	0	2	0	0	1	0	
	%	3.6	6.5	1.0	0.9	7.0	12.8	17.9	12.9	9.9	9.7	10.3	8.3	13.5	11.1	12.8	17.7	0.0	1.2	0.0	0.0	1.6	0.0	
Total %	N	28	124	204	113	86	179	117	85	122	154	156	60	52	81	235	107	13	173	15	181	62	59	
	%	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	

CA- Cassava PP- Pepper TT- Tomato WM- Watermelon GE- Garden Egg MZ- Maize YM- Yam GN- Groundnut
 PL- Plantain RC- Rice SB- Soyabean OV- Overall

Appendix 6: Reasons for choice of crop produced

Indicator	Greater Accra				Eastern					Brong Ahafo					Northern					
	RTS	VG	FT	TL	RTS	CL	VG	FT	TL	RTS	CL	VG	FT	TL	RTS	CL	FT	TL		
Ease of production	N	9	80	41	130	17	16	4	3	37	14	34	2	3	53	0	24	0	24	
%		32.1	24.4	36.3	27.7	7.08	13.1	1.1	3.7	5.0	5.3	14.5	1.8	3.7	7.7	0.0	5.1	0.0	4.8	10
Good climate (/soil/land, weather)	N	8	69	14	91	81	36	113	24	230	83	53	34	24	194	7	170	5	182	
%		28.6	21.0	12.4	19.4	33.8	29.5	29.7	29.6	30.9	31.6	22.6	30.4	29.6	28.1	46.7	35.8	38.4	36.2	28
Ready market	N	7	142	45	194	38	19	102	25	159	48	35	30	25	138	3	58	2	62	
%		25.0	43.3	39.8	41.4	15.8	15.6	26.8	30.9	21.4	18.3	14.9	26.8	30.9	19.9	13.3	12.2	15.4	12.3	22
Available inputs/gov't support	N	0	5	1	6	2	6	13	3	21	7	7	8	3	25	0	27	0	27	
%		0.0	1.5	0.9	1.3	0.8	4.9	3.4	3.7	2.8	2.7	2.9	7.1	3.7	3.6	0.0	5.7	0.0	5.4	3
Knowledge in production	N	2	18	7	27	76	32	93	17	201	55	47	23	17	142	0	126	2	131	
%		7.1	5.5	6.2	5.8	31.7	26.2	24.4	21.0	27.1	20.9	20.0	20.5	21.0	20.6	20.0	26.5	15.4	26.0	20
Low cost production	N	1	4	4	9	5	1	1	0	1	21	29	3	0	53	3	67	4	74	
%		3.6	1.2	3.5	1.9	2.1	0.8	0.3	0.0	0.9	7.9	12.3	2.7	0.0	7.7	20.0	14.1	30.8	14.7	5
Others	N	1	10	1	12	21	12	55	9	88	35	30	12	9	86	0	3	0	3	
%		3.6	3.1	0.9	2.6	8.8	9.8	14.4	11.1	11.8	13.3	12.8	10.7	11.1	12.5	0	0.6	0.0	0.6	7
Total	N	28	328	113	469	240	122	381	81	743	263	235	112	81	691	15	475	13	503	2
%		100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
RTS – Roots & Tuber/Sucker		CL - Cereal/Legume				FT – Fruit				VG – Vegetable				TL- Total		OV - Overall				

Appendix 7: Land Acquisition

Crop Type and Region																			
Indicator	Greater Accra				Eastern				Brong Ahafo					Northern				OV	
	RTS	VG	FT	TL	RTS	CL	VG	TL	RTS	CL	VG	FT	TL	RTS	CL	FT	TL		
Outright purchase	0	0	0	0	0	0	1	2	2	1	0	2	5	0	0	0	0		
	0	0	0	0	0	0	50	100	40	20	0	40	100	0	0	0	0	1	
	0	0	0	0	0	0	0.72	0.71	1.98	1.15	0	6.45	1.92	0	0	0	0	0.	
Inherited	6	80	19	105	21	10	20	51	21	16	5	7	49	7	163	4	174	3	
	5.71	76.19	18.1	100	41.18	19.61	39.22	100	42.86	32.65	10.2	14.29	100	4.02	93.68	2.3	100	1	
	42.86	48.48	39.58	46.26	22.11	21.74	14.39	18.21	20.79	18.39	12.2	22.58	18.85	100	81.09	80	81.69	3:	
Short-term lease/hire	8	85	29	122	64	32	116	212	77	70	35	22	204	0	38	1	39	5	
	6.56	69.67	23.77	100	30.19	15.09	54.72	100	37.75	34.31	17.16	10.78	100	0	97.44	2.56	100	1	
	57.14	51.52	60.42	53.74	67.37	69.57	83.45	75.71	76.24	80.46	85.37	70.97	78.46	0	18.91	20	18.31	5:	
Sharecropping	0	0	0	0	0	4	2	15	1	0	1	0	2	0	0	0	0		
	0	0	0	0	0	26.67	13.33	100	50	0	50	0	100	0	0	0	0	1	
	0	0	0	0	0	8.7	1.44	5.36	0.99	0	2.44	0	0.77	0	0	0	0		
Total	14	165	48	227	95	46	139	280	101	87	41	31	260	7	201	5	213	9	
	6.17	72.69	21.15	100	33.93	16.43	49.64	100	38.85	33.46	15.77	11.92	100	3.29	94.37	2.35	100	1	
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	1	
RTS – Roots & Tuber/Sucker		CL - Cereal/Legume			FT – Fruit			VG – Vegetable			TL- Total			OV - Overall					

Appendix 8: Distribution of farmers with special marketing Arrangement by Crop and Region

Target Crop and Region																										
Greater Accra						Eastern							Brong Ahafo							Northern						
Indicator	CA	PP	TT	WM	TL	CA	GE	MZ	PL	PP	TT	TL	CA	MZ	PP	TT	WM	YM	TL	GN	MZ	RC	SB	WM	YM	TL
Yes	1	15	16	7	39	15	13	22	33	40	19	142	2	18	1	1	4	10	36	3	1	2	3	2	0	11
	2.56	38.46	41.03	17.95	100	10.56	9.15	15.49	23.24	28.17	13.38	100	5.56	50	2.78	2.78	11.11	27.78	100	27.27	9.09	18.18	27.27	18.18	0	100
	7.14	20.55	17.39	14.58	17.18	41.67	43.33	47.83	55.93	59.7	45.24	50.71	3.33	20.69	4.35	5.56	12.9	24.39	13.85	3.75	1.37	8	13.04	40	0	5.16
No	13	58	76	41	188	21	17	24	26	27	23	138	58	69	22	17	27	31	224	77	72	23	20	3	7	202
	6.91	30.85	40.43	21.81	100	15.22	12.32	17.39	18.84	19.57	16.67	100	25.89	30.8	9.82	7.59	12.05	13.84	100	38.12	35.64	11.39	9.9	1.49	3.47	100
	92.86	79.45	82.61	85.42	82.82	58.33	56.67	52.17	44.07	40.3	54.76	49.29	96.67	79.31	95.65	94.44	87.1	75.61	86.15	96.25	98.63	92	86.96	60	100	94.84
Total	14	73	92	48	227	36	30	46	59	67	42	280	60	87	23	18	31	41	260	80	73	25	23	5	7	213
	6.17	32.16	40.53	21.15	100	12.86	10.71	16.43	21.07	23.93	15	100	23.08	33.46	8.85	6.92	11.92	15.77	100	37.56	34.27	11.74	10.8	2.35	3.29	100
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CA- Cassava Overall	PP- Pepper		TT- Tomato		WM- Watermelon		GE- Garden Egg		MZ- Maize		YM- Yam		GN- Groundnut		PL- Plantain		RC- Rice		SB- Soyabean							

Appendix 9: Post-harvest Crop Losses (%)

Crop Type and Region																		
	Greater Accra				Eastern				Brong Ahafo					Northern				
Indicator	RTS	VG	FT	TL	RTS	CL	VG	TL	RTS	CL	VG	FT	TL	RTS	CL	FT	TL	OV
0 - 9	14	64	12	90	52	20	58	130	58	26	7	1	92	5	161	2	168	480
	15.56	71.11	13.33	100	40	15.38	44.62	100	63.04	28.26	7.61	1.09	100	2.98	95.83	1.19	100	100
	100	38.79	25	39.65	54.74	43.48	41.73	46.43	57.43	29.89	17.07	3.23	35.38	71.43	80.1	40	78.87	48.98
10 - 19	0	13	3	16	36	18	65	119	28	42	9	6	85	2	25	3	30	250
	0	81.25	18.75	100	30.25	15.13	55	100	32.94	49.41	10.59	7.06	100	6.67	83.33	10	100	100
	0	7.88	6.25	7.05	37.89	39.13	46.76	42.5	27.72	48.28	21.95	19.35	32.69	28.57	12.44	60	14.08	25.51
20 - 29	0	16	2	18	6	5	14	25	11	12	22	14	59	0	9	0	9	111
	0	88.89	11.11	100	24	20	56	100	18.64	20.34	37.29	23.73	100	0	100	0	100	100
	0	9.7	4.17	7.93	6.32	10.87	10.07	8.93	10.89	13.79	53.66	45.16	22.69	0	4.48	0	4.23	11.33
30 - 39	0	7	4	11	0	1	0	1	4	4	3	7	18	0	5	0	5	35
	0	63.64	36.36	100	0	100	0	100	22.22	22.22	16.67	38.89	100	0	100	0	100	100
	0	4.24	8.33	4.85	0	2.17	0	0.36	3.96	4.6	7.32	22.58	6.92	0	2.49	0	2.35	3.57
40 - 49	0	19	11	30	0	1	0	1	0	2	0	0	2	0	0	0	0	33
	0	63.33	36.67	100	0	100	0	100	0	100	0	0	100	0	0	0	0	100
	0	11.52	22.92	13.22	0	2.17	0	0.36	0	2.3	0	0	0.77	0	0	0	0	3.37
50 and above	0	46	16	62	1	1	2	4	0	1	0	3	4	0	1	0	1	71
	0	74.19	25.81	100	25	25	50	100	0	25	0	75	100	0	100	0	100	100
	0	27.88	33.33	27.31	1.05	2.17	1.44	1.43	0	1.15	0	9.68	1.54	0	0.5	0	0.47	7.24
Total	14	165	48	227	95	46	139	280	101	87	41	31	260	7	201	5	213	980
	6.17	72.69	21.15	100	33.93	16.43	49.64	100	38.85	33.46	15.77	11.92	100	3.29	94.37	2.35	100	100
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
RTS – Roots & Tuber/Sucker CL - Cereal/Legume FT – Fruit VG – Vegetable TL- Total OV - Overall																		

Appendix 10: Perception about Farm Profitability over the past 5 years by Target Crop and Region

Target Crop and Region																										
Indicator	Greater Accra					Eastern							Brong Ahafo							Northern						
	CA	PP	TT	WM	TL	CA	GE	MZ	PL	PP	TT	TL	CA	MZ	PP	TT	WM	YM	TL	GN	MZ	RC	SB	WM	YM	TL
Improved significantly	6	22	12	10	50	3	11	7	21	33	21	96	7	4	6	8	13	11	49	18	12	5	5	1	0	41
	12	44	24	20	100	3.13	11.46	7.29	21.88	34.38	21.88	100	14.29	8.16	12.24	16.33	26.53	22.45	100	43.9	29.27	12.2	12.2	2.44	0	100
	42.86	30.14	13.04	20.83	22.03	8.33	36.67	15.22	35.59	49.25	50	34.29	11.67	4.6	26.09	44.44	41.94	26.83	18.9	22.5	16.44	20	21.74	20	0	19.25
Somewhat improved	6	22	20	5	53	25	13	24	33	30	20	145	26	58	9	8	14	24	139	42	33	12	12	1	4	104
	11.32	41.51	37.74	9.43	100	17.24	8.97	16.55	22.76	20.69	13.79	100	18.71	41.73	6.47	5.76	10.07	17.27	100	40.38	31.73	11.54	11.54	0.96	3.85	100
	42.86	30.14	21.74	10.42	23.35	69.44	43.33	52.17	55.93	44.78	47.62	51.79	43.33	66.67	39.13	44.44	45.16	58.54	53.5	52.5	45.21	48	52.17	20	57.14	48.83
Remained the same	1	10	13	10	34	7	5	12	5	3	1	33	25	21	8	2	3	4	63	8	9	5	2	2	0	26
	2.94	29.41	38.24	29.41	100	21.21	15.15	36.36	15.15	9.09	3.03	100	39.68	33.33	12.7	3.17	4.76	6.35	100	30.77	34.62	19.23	7.69	7.69	0	100
	7.14	13.7	14.13	20.83	14.98	19.44	16.67	26.09	8.47	4.48	2.38	11.79	41.67	24.14	34.78	11.11	9.68	9.76	24.2	10	12.33	20	8.7	40	0	12.21
Decreased	1	13	24	13	51	1	1	2	0	0	0	4	2	3	0	0	0	2	7	7	14	3	4	1	3	32
	1.96	25.49	47.06	25.49	100	25	25	50	0	0	0	100	28.57	42.86	0	0	0	28.57	100	21.88	43.75	9.38	12.5	3.13	9.38	100
	7.14	17.81	26.09	27.08	22.47	2.78	3.33	4.35	0	0	0	1.43	3.33	3.45	0	0	0	4.88	2.69	8.75	19.18	12	17.39	20	42.86	15.02
Fade losses	0	6	23	10	39	0	0	1	0	1	0	2	0	1	0	0	1	0	2	5	5	0	0	0	0	10
	0	15.38	58.97	25.64	100	0	0	50	0	50	0	100	0	50	0	0	50	0	100	50	50	0	0	0	0	100
	0	8.22	25	20.83	17.18	0	0	2.17	0	1.49	0	0.71	0	1.15	0	0	3.23	0	0.77	6.25	6.85	0	0	0	0	4.69
Total	14	73	92	48	227	36	30	46	59	67	42	280	60	87	23	18	31	41	260	80	73	25	23	5	7	213
	6.17	32.16	40.53	21.15	100	12.86	10.71	16.43	21.07	23.93	15	100	23.08	33.46	8.85	6.92	11.92	15.77	100	37.56	34.27	11.74	10.8	2.35	3.29	100
	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
A- Cassava	PP- Pepper		TT- Tomato		WM- Watermelon		GE- Garden Egg		MZ- Maize		YM- Yam		GN- Groundnut		PL- Plantain		RC- Rice									
B- Soyabean	OV- Overall																									

Appendix 11: Production constraints confronting farmers

Indicator	Rank												Total
	1	2	3	4	5	6	7	8	9	10	11	12	
Bad Network	188	45	30	14	11	18	10	8	3	4	4	65	400
	47	11.25	7.5	3.5	2.75	4.5	2.5	2	0.75	1	1	16.25	100
Pest and Disease Infestation	48	175	31	14	14	21	23	25	11	18	16	4	400
	12	43.75	7.75	3.5	3.5	5.25	5.75	6.25	2.75	4.5	4	1	100
Lack of Extension Service	24	31	152	36	20	11	15	22	15	29	30	15	400
	6	7.75	38	9	5	2.75	3.75	5.5	3.75	7.25	7.5	3.75	100
Lack of Mechanization services	22	36	35	156	35	15	13	22	14	26	17	9	400
	5.5	9	8.75	39	8.75	3.75	3.25	5.5	3.5	6.5	4.25	2.25	100
High Cost of Mechanization services	15	21	37	46	151	27	21	13	17	23	15	14	400
	3.75	5.25	9.25	11.5	37.75	6.75	5.25	3.25	4.25	5.75	3.75	3.5	100
Poor quality input	5	10	16	14	27	151	40	30	24	25	34	24	400
	1.25	2.5	4	3.5	6.75	37.75	10	7.5	6	6.25	8.5	6	100
High cost of inputs	18	20	29	14	24	22	138	38	23	22	23	29	400
	4.5	5	7.25	3.5	6	5.5	34.5	9.5	5.75	5.5	5.75	7.25	100
Lack of Storage facility	20	16	16	30	23	24	22	123	46	26	24	30	400
	5	4	4	7.5	5.75	6	5.5	30.75	11.5	6.5	6	7.5	100
Lack of quality seeds	3	9	10	14	31	24	32	31	141	35	36	34	400
	0.75	2.25	2.5	3.5	7.75	6	8	7.75	35.25	8.75	9	8.5	100
Poor Yield	15	10	18	23	27	26	24	33	28	135	41	20	400
	3.75	2.5	4.5	5.75	6.75	6.5	6	8.25	7	33.75	10.25	5	100
Access Credit	32	10	12	16	17	27	36	30	27	29	120	44	400
	8	2.5	3	4	4.25	6.75	9	7.5	6.75	7.25	30	11	100
Access to land	10	17	14	23	20	34	26	25	51	28	40	112	400
	2.5	4.25	3.5	5.75	5	8.5	6.5	6.25	12.75	7	10	28	100

Appendix 12: General Constraints in Agriculture

Indicator	Rank											Total
	1	2	3	4	5	6	7	8	9	10	11	
Difficulty in accessing credit	256	19	12	6	11	23	7	13	1	6	46	400
	64	4.75	3	1.5	2.75	5.75	1.75	3.25	0.25	1.5	11.5	100
High Interest Rate	5	198	34	17	15	14	17	13	22	38	27	400
	1.25	49.5	8.5	4.25	3.75	3.5	4.25	3.25	5.5	9.5	6.75	100
Lack of Insurance	14	13	135	29	25	21	16	28	50	40	29	400
	3.5	3.25	33.8	7.25	6.25	5.25	4	7	12.5	10	7.25	100
Poor knowledge in financial management	3	11	18	113	25	29	32	54	38	52	25	400
	0.75	2.75	4.5	28.3	6.25	7.25	8	13.5	9.5	13	6.25	100
Limited Irrigation facilities	28	35	40	34	135	26	21	17	21	22	21	400
	7	8.75	10	8.5	33.75	6.5	5.25	4.25	5.25	5.5	5.25	100
Pest and Disease Infestation	41	27	30	33	19	120	34	23	14	24	35	400
	10.3	6.75	7.5	8.25	4.75	30	8.5	5.75	3.5	6	8.75	100
Bad weather	10	28	38	38	32	30	107	41	26	24	26	400
	2.5	7	9.5	9.5	8	7.5	26.8	10.25	6.5	6	6.5	100
Climate change	8	13	35	43	32	23	32	110	45	28	31	400
	2	3.25	8.75	10.8	8	5.75	8	27.5	11.25	7	7.75	100
Difficulty in land access for farming	6	18	29	28	41	39	27	21	114	49	28	400
	1.5	4.5	7.25	7	10.25	9.75	6.75	5.25	28.5	12.25	7	100
Government Agricultural policies	2	24	20	26	29	46	49	40	29	93	42	400
	0.5	6	5	6.5	7.25	11.5	12.3	10	7.25	23.25	10.5	100
Access to market	27	14	9	33	36	29	58	40	40	24	90	400
	6.75	3.5	2.25	8.25	9	7.25	14.5	10	10	6	22.5	100

Appendix 13: Source of major crops consumed in the last 12 months

Indicator	Major Crops Consumed																											
	BN	CB	CR	CA	CN	CY	CC	CP	GE	GG	GN	LT	MG	ML														
Percentage of consumers who consumed food items produced in their region (Local)																												
Greater Accra	0.0	0.0	0.0	13.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
Eastern	100.0	25.0	0.0	100.0	0.0	100.0	0.0	13.0	91.7	0.0	0.0	0.0	0.0															
Brong Ahafo	100.0	0.0	100.0	100.0	100.0	100.0	100.0	39.1	100.0	100.0	100.0	0.0	25.0															
Northern	0.0	0.0	0.0	96.7	0.0	0.0	0.0	73.2	0.0	0.0	100.0	100.0	NM	8														
Percentage of consumers who consumed food items produced from another region																												
Greater Accra	0.0	0.0	0.0	86.8	0.0	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	10														
Eastern	0.0	75.0	100.0	0.0	0.0	0.0	0.0	87.0	8.3	0.0	100.0	0.0	100.0															
Brong Ahafo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	60.9	0.0	0.0	0.0	0.0	75.0															
Northern	100.0	100.0	100.0	3.3	0.0	0.0	0.0	26.8	100.0	100.0	0.0	0.0	NM	1														
Percentage of consumers who consumed imported food items																												
Greater Accra	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
Eastern	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0															
Brong Ahafo	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0															
Northern	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NM															
BN- Banana	CB- Cabbage	CR- Carrot	CA- Cassava	CY- Cocoyam	CC- Cucumber	CP- Cowpea	GE- Garden Egg	GG- Ging	GN- Groundnut	LT- Lettuce	MG- Mango	ML- Millet	MZ- Maize	ON- Onion	OK- Okro	OR- Orange	PL- Plant	PP- Plantain	PP- Pepper	PO- Potato	PN- Pineapple	PP- Pawpaw	RC- Rice	SB- Soyabean	SC- Sugarcane	TT- Tomatoes	YM- Yams	WM- Watermelon

Appendix 14: Source of major crops consumed in the last 12 months Cont'd

Region	Crop																										
	BN	CB	CR	CA	CN	CY	CC	CP	GE	GG	GN	LT	MG	ML	MZ	ON	OK	OR	PL	PP	PO	PN	RC	SB	SG	TT	WM
Percentage of consumers who consumed food items produced in their region (Local)																											
Greater Accra	0	0	0	5	0	0	0	0	0	0	0	0	0	0	1	1	1	0	2	1	0	0	4	0	0	18	0
	0	0	0	15.15	0	0	0	0	0	0	0	0	0	0	3.03	3.03	3.03	0	6.06	3.03	0	0	12.12	0	0	54.55	0
Eastern	3	1	0	78	0	7	0	3	11	0	0	0	0	0	73	7	16	1	78	51	1	0	3	0	0	5	1
	0.78	0.26	0	20.21	0	1.81	0	0.78	2.85	0	0	0	0	0	18.91	1.81	4.15	0.26	20.21	13.21	0.26	0	0.78	0	0	1.3	0.26
Brong Ahafo	3	0	1	66	1	5	1	9	20	1	2	0	1	0	40	7	9	2	52	38	0	2	6	0	0	17	4
	0.9	0	0.3	19.7	0	1.49	0.3	2.69	5.97	0.3	0.6	0	0.3	0	11.94	2.09	2.69	0.6	15.52	11.34	0	0.6	1.79	0	0	5.07	1.19
Northern	0	0	0	29	0	0	0	30	0	0	5	1	0	13	51	0	9	0	0	4	1	0	42	1	3	10	4
	0	0	0	11.33	0	0	0	11.72	0	0	1.95	0.39	0	5.08	19.92	0	3.52	0	0	1.56	0.39	0	16.41	0.39	1.17	3.91	1.56
Total	6	1	1	178	1	12	1	42	31	1	7	1	1	13	165	15	35	3	132	94	2	2	55	1	3	50	9
	0.59	0.1	0.1	17.62	0.1	1.19	0.1	4.16	3.07	0.1	0.69	0.1	0.1	1.29	16.34	1.49	3.47	0.3	13.07	9.31	0.2	0.2	5.45	0.1	0.3	4.95	0.89
Percentage of consumers who consumed food items produced from another region																											
Greater Accra	0	0	0	33	0	3	0	2	0	0	0	0	0	2	46	1	0	0	21	0	0	1	14	1	0	7	0
	0	0	0	21.29	0	1.94	0	1.29	0	0	0	0	0	1.29	29.68	0.65	0	0	13.55	0	0	0.7	9.03	0.65	0	4.52	0
Eastern	0	3	2	0	0	0	0	20	1	0	1	0	5	0	1	0	0	0	0	0	0	1	1	0	0	5	1
	0	3.85	2.56	0	0	0	0	25.64	1.28	0	1.28	0	6.4	0	1.28	0	0	0	0	0	0	1.3	1.28	0	0	6.41	1.28
Brong Ahafo	0	0	0	0	0	0	0	14	0	0	0	0	3	0	8	3	0	0	0	0	0	0	2	0	0	1	0
	0	0	0	0	0	0	0	36.84	0	0	0	0	7.9	0	21.05	7.89	0	0	0	0	0	0	5.26	0	0	2.63	0
Northern	1	1	1	1	0	0	0	11	3	7	0	0	0	2	0	3	0	0	0	1	0	1	0	0	0	0	0
	3.13	3.13	3.13	3.13	0	0	0	34.38	9.38	22	0	0	0	6.25	0	9.38	0	0	0	3.13	0	3.1	0	0	0	0	0
Total	1	4	3	34	0	3	0	47	4	7	1	0	8	4	55	7	0	0	21	1	0	3	17	1	0	13	1
	0.33	1.32	0.99	11.22	0	0.99	0	15.51	1.32	2.3	0.33	0	2.6	1.32	18.15	2.31	0	0	6.93	0.33	0	1	5.61	0.33	0	4.29	0.33
Percentage of consumers who consumed imported food items																											
Greater Accra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	0	0
Eastern	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	20	0	0	0	0	0	0	86	0	0	35	0
	0	0	0	0	0	0	0	0	0	0	0	0.7	0	0	0	14	0	0	0	0	0	0	60.14	0	0	24.48	0
Brong Ahafo	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	0	0	0	53	0	0	25	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17.9	0	0	0	0	0	0	0	55.79	0	0	26.32	0
Northern	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0	0	3	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84.21	0	0	15.79	0
Total	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	37	0	0	0	0	0	0	202	0	0	63	0
	0	0	0	0	0	0	0	0	0	0	0	0.33	0	0	0	12.2	0	0	0	0	0	0	66.45	0	0	20.72	0
BN- Banana CB- Cabbage CR- Carrot CA- Cassava CY- Cocoyam CC- Cucumber CP- Cowpea GE- Garden Egg GG- Ginger GN- Groundnut LT- Lettuce MG- Mango ML- Millet Maize ON- Onion OK- Okro OR- Orange PL- Plantain PP- Pepper PO- Potato PN- Pineapple PP- Pawpaw RC- Rice SB- Soyabean SC- Sugarcane TT- Tomatoes YN WM- Watermelon																											



PEASANT FARMERS ASSOCIATION OF GHANA

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The Peasant Farmers Association of Ghana (PFAAG), is the apex Farmer-Based Non-Governmental Organization in Ghana with the mandate to advocate for pro poor agriculture and trade policies and any issues that affects the livelihoods of small holder farmers.

CONTACT INFO

C/O PMB 56, KIA-ACCRA

House Number E261/17

Abavana Junction (Maamobi Polyclinic Road)

Digital Address: GA-022-2111

+233 (0)302 254 518

+233 (0)244 657 451

info@peasantfarmers.com

www.peasantfarmers.com