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GHANA FEED THE FUTURE AGRICULTURE POLICY SUPPORT PROJECT (APSP)

SITUATION ANALYSIS OF AGRICULTURAL MARKETING ACTIVITIES AND RELATED INSTITUTIONAL ARRANGEMENTS IN GHANA

Contract No. 641-C-14-00001

USAID
FROM THE AMERICAN PEOPLE

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March, 2017

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Acronyms

ABL	Accra Brewery Limited
ADVANCE	Agriculture Development and Value Chain Enhancement
AESD	Agriculture Engineering Services Directorate
AEZs	Agroecological zones
AIC	Agribusiness Information Centre
APD	Animal Production Directorate
ASCo	Ayensu Starch Company Limited
BUSAC	Business Sector Advocacy Challenge Fund
CABI	Centre for Agriculture and Biosciences International
CBI	Centre for the Promotion of Imports from Developing Countries Netherlands,
CSD	Crop Services Directorate CSD
DAES	Directorate of Agricultural Extension Services
DANIDA	Danish International Development Agency
EDAIF	Export Development and Agricultural Development Fund
EMQAP	Export marketing and Quality Awareness Project
EPA	Environmental Protection Agency
EU	European Union
FAGE	Federation of Ghanaian Exporters
FAO	Food and Agriculture Organisation
FASDEP	Food and Agriculture Sector Development Policy
FBOs	Farmer-Based Organisations
FDA	Food and Drug Authority
FiNGAP	Financing Ghana's Agriculture Project
FRI	Food Research Institute
FSA	Foods Standards Authority (FSA)
GADCO	Global Agri-Development Company
GAIDA	Ghana Input Dealers Association
GAP	Good Agronomic/Agricultural Practices
GAPTO	Ghana Agricultural Producers and Traders Association
GASIP	Trade Policy and the Ghana Agricultural Investment Programme
GASIP	Ghana Agriculture Sector Investment Programme
GAVEX	Ghana Vegetable Exporters
GEA	Ghana Export Authority
GEPA	Ghana Export Promotion Authority
GETIC	Ghana Export Trade Information Centre
GGBL	Guinness Ghana Brewery Ltd
GGC	Ghana Grains Council
GHABROP	Ghana Broiler Revitalization Project
GIZ	German International Development
GLSS	Ghana Living Standards Survey
GSA	Ghana Standards Authority
GSS	Ghana Statistical Services
GSSP	Ghana Strategy Support Program
HA	Hectare
HACCP	Hazard Analysis and Critical Control Points
HQCF	High Quality Cassava Flour
HQCS	High Quality Cassava Starch
ICT	Information and Communication Technologies

IFDC	International Fertiliser Development Corporation/International Soil Fertility Management Institute
IFPRI	International Food Policy Research Institute
IPPC	International Plant Protection Convention
ITC	International Trade Centre
IUU	Unreported and Unregulated fishing
LBTAG	Livestock Breeders and Traders Association of Ghana
MADE	Market Development for Northern Ghana
MDAs	Ministries, Departments and Agencies
MIS	Market Information Services
MISTOWA	Market Information Services and Traders' Organisation in West Africa
MMDAs	Metropolitan, Municipal and District Assemblies
MOAP	Market Oriented Agriculture Project
MoFA	Ministry of Food and Agriculture
MoFAD	Ministry of Fisheries and Aquaculture Development
MoTI	Ministry of Trade and Industry
MSU	Marketing Service Unit
NACOB	Narcotics Control Board
NAFCO	National Food Buffer Stock Company
NEP	National Enquiry Point
NGOs	Non-Governmental Organizations
NRCD	National Redemption Council Decree
NRGP	Northern Rural Growth Program
OIE	World Organisation for Animal Health
OVCF	Outgrower Value Chain Fund
PD	Participatory diagnosis
PFAG	Associations studied are the peasant Farmers Association of Ghana
PME	Planning, Monitoring and Evaluation
PMR	Participatory Market Research
PPME	Policy Planning Monitoring and Evaluation
PPRSD	Plant Protection and Regulatory Services
PSD	Private Sector Development
PSI	Presidential Special Initiative
PTD	Participatory Technology Development
SEND	Sustainable Enterprise Development
SFMC	Savanna Farmers Marketing Company
SPS	Sanitary and Phytosanitary System
SRID	Statistics Research and Information Directorate
TIPCEE	Trade and Investment Program for Competitive Export Economy
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organisation
USAID	United States Agency for International Development
VC	Value Chain
VEPEAG	Vegetable Producers and Exporters Association of Ghana
VSD	Veterinary Services Directorate
WAAPP	West Africa Agricultural Productivity Programme
WFP	World Food Program
WIAD	Women in Agricultural Development
WTO	World Trade Organization

Glossary

Aggregator
An intermediary actor in the value chain who buys small quantities of produce from small farmers (also referred to as 'collector') and 'aggregates' the produce for larger trader, end-user (processor, exporter).

Agriculture
Agriculture in this study includes the sub-sectors of crops, livestock and fisheries and covers production and off-farm activities.

Agricultural marketing
Agricultural marketing encompasses a series of activities involved in moving agricultural produce from the point of production to the point of consumption. It includes harvesting, handling, storage, processing, retailing and consumption. Agricultural marketing includes agencies and policies involved in the procurement of farm inputs by producers and the movement of agricultural products from the farms to the consumers.

Agricultural Marketing Policy
The set of guiding principles that helps a country to make decisions that inure to the achievement of the goals of marketing outputs of its agricultural sector. A policy is a principle of action adopted to guide decisions at the topmost management level (in the context of Ghana, at the Cabinet and Ministerial level).

Agricultural Value Chain
A 'value chain' describes the full range of activities required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers and final disposal after use (Kaplinsky and Morris 2001). The value chain does not exist in the sense of having a tangible reality; rather it is a framework for understanding how the world works (Jonathan Mitchell, Christopher Coles and Jodie Keane, 2009).

Value chain upgrading
Upgrading a value chain means acquiring the technological, institutional and market capabilities that allow resource-poor rural communities to improve their competitiveness and move into higher-value activities. Upgrading is the process of trading up, trading in higher value markets or items.

Commercial farming
Commercial farming is farming with a market orientation, though it is not exclusive to large scale mechanized farms. Small family farms with market orientation are also commercial farmers.

Smallholder
In the Ghanaian context, smallholders produce on about 2 hectares (ha) or less per farmer with a few livestock or poultry. They produce mainly for home consumption or local markets. They use little if any purchased input, including seed, therefore crop yield or livestock productivity are very low.

Informal marketing

Market participants are largely individual actors operating outside an organized supply chain with little or no recording of transactions and not bound by formal contracts.

Nucleus farmer
A large commercial farm entity around which small farmers are organized, the commercial farm engages with local service providers for technical support, credit, seed, chemicals and transport for its farmers. The commercial farm also guarantees the small farmers a market for their produce by procuring their produce.

Off-taker
The final buyer of produce from a farmer either directly or through an intermediary that collects/aggregates the produce of a large numbers of small farmers.

Out-grower
An out-grower is a farmer contracted by a large commercial farmer to produce a commodity for the mutual benefit of the out-grower (access to inputs, technology, services) and contractor (access to land, labor, guaranteed supply of produce).

Strategy
Strategy is an action plan, designed to achieve goals of a country, sector, or business. A strategy is a plan of action.

Trader
An entity that buys produce from one agent in the market and sells it to another or the final consumer, usually as part of a transactional relationship. In this report, the collector, aggregator, wholesaler, and retailer are all traders. The entity that coordinates transactions between these parties, and does not take possession of the produce at any point is a "middleman."

Trade credit
Credit provided by one marketing agent to another through a formal or informal agreement and in the informal agricultural marketing, trade credit is based on trust built through long-term relationship.

EXECUTIVE SUMMARY

Background

The main objective of the study of agricultural marketing practices and related institutional and regulatory frameworks is to provide a comprehensive situational analysis of the agricultural marketing system in the country by assessing strengths and weaknesses against the current and future needs of the sector; and identifying potential interventions and directions for agriculture marketing policy reforms. Specifically, the goal is to assess institutions responsible for regulating the market structure, their conduct and performance (domestic and foreign trade), including the regulation of primary agricultural produce markets and the legal and regulatory provisions relating to marketing activities, especially pricing and quality specifications in formal agricultural markets.

The market structure, conduct and performance framework is used to assess the workings of the agricultural marketing system and its efficiency. The study design is qualitative and relies heavily on content analysis of literature on the subject, complemented with interviews from regulatory and facilitating organizations through individual and focus group discussions. Relevant laws were also accessed and reviewed.

The findings of the research are presented in Chapter 3, as follows:

- Section 3.2 reports on the assessment of the marketing system following the structure-conduct-performance framework.
- Section 3.3 presents ongoing initiatives to upgrade value chains in Ghana and elsewhere.
- Section 3.4 presents policies and mandates of public and private institutions.
- Section 3.5 a review of legal frameworks governing the marketing system.
- Section 3.6 discusses the roles of the regulatory and facilitating organisations.
- Section 3.7 focusses on providers of market information.
- Section 3.8 is an assessment of state of major marketing organisations.
- Chapter 4 presents a summary of findings and the study conclusions, with recommendations presented in Chapter 5.

The Agricultural Marketing System

Agricultural markets are dictated by the structure of production, which is dominated by small scale farmers. Markets at the farm gates have large numbers of farmers/sellers, and fewer buyers. Ghana's agricultural production is highly seasonal and therefore characterized by periods of glut and scarcity, which are exacerbated by limited processing and storage infrastructure. As a result, producers have relatively weaker marketing power than traders, especially in pricing. Market access challenges of many and widely dispersed smallholder farmers has led to the creation of periodic markets in rural areas, and along major trunk roads by rural traders.

Input markets are also informal as many dealers are not registered and do not have permits, therefore oversight is limited and malpractices are common. There is no professional requirement for trading in agrochemicals therefore the human resource capacity is very low. Training of dealers should be intensified. Monitoring dealers and enforcement of regulations is weak because of inadequate logistics of the EPA and PPRSD.

Marketing chain and Nature of Transactions

The dominant practices in Ghana are the personalized spot market (face to face transactions between sellers and buyers) and hybrids of informal contracts which are facilitated by agents/brokers. The main theme of the research problem is that the actors mediating between the farmer and the final off-taker are weak and need strengthening. Growth in agro-processing firms and programs aimed at facilitating the development of agricultural marketing have led to the emergence of larger and formal aggregators, who are also operating in value chain networks with enhanced access to inputs and services, as well as training on good agricultural practices.

The value chain networks provide win-win situations for producers, traders/aggregators and off-takers/processors/exporters. Value chains are being upgraded to supply industrial processors and users. The challenge facing aggregators and off-takers in the networks is lack of trust and the readiness of farmers to side-sell produce outside any contractual arrangements. Pricing of agricultural produce is largely dictated by supply and demand at the point of sale. Also, information asymmetry in favor of traders gives the latter stronger bargaining power. The facilitated value chain networks make room for price negotiation between producers and buyers before harvest and renegotiation at harvest if the negotiated prices are below prevailing spot market prices.

The informal agricultural marketing system is difficult and the consequences are improper handling of produce at farm gate, poor storage and packaging, exposure to the elements and improper transportation, especially of fresh produce in the absence of cold chains. Retailers are more likely to sort produce into grades than actors upstream, because of low incentive for grading. Ad hoc application of standards for produce and the use of unstandardized measures for trading limits transparency and fairness, especially for smaller actors. The positive developments in this area are the development of grades for grains by the Ghana Standards Authority in Collaboration with the Ghana Grains Council and with support of development partners. The National Buffer Stock Company is also a lead agency using grades and standard measures for their trading. The Ghana Green label has also been developed for fruits and vegetables, especially for export trade. All the value chain upgrade partnerships apply grades and standard weights and measures.

Market Information Services (MIS)

Price information is the most common information sought by market actors, which they access through other farmers and traders. Traders also obtain price information from urban markets and collude to set prices in the markets - rural wholesale/assembly and urban market centres. Traders and farmers may also obtain information from public and private market information service providers via open media. Information from these formal sources can be obtained on request but at a cost if the source is private. Trade associations as well as farmer organizations claim they support their members with market information. There is an emergence of private market information service providers, the pioneering agency being Esoko Ghana.

Wholesale traders in urban centres organize themselves into commodity associations (e.g. yam and cassava sellers, grain sellers, citrus sellers, etc.) under the leadership of "market queens." These are mainly welfare associations but have strong influence in the facilitating marketing activities of their members. They organize transport, provide information and, most importantly, control the flow of produce into markets in cities. Where traders are successful in forming an association, they have the power to collude to fix prices offered to farmers. This limits competitiveness of the market as it tilts market power in favor of traders.

Market Performance

Market performance is assessed by price variability, integration of prices between source and destination markets and interceptions of exports of produce. Although seasonal price variability is inevitable because of seasonality in production, the level of variability is magnified by limited processing and stockpiling capacity. The GGC is promoting warehouse receipt schemes which will increase this capacity. Several studies report some level of price integration but that greater integration is limited by poor road infrastructure and the tendency of traders to respond quickly to upward price shocks and to adjust prices when shocks are downward and profit margins are likely to be squeezed. This is a disadvantage to consumers.

Policies and Legal Frameworks

There are strategies in the Food and Agriculture Sector Development Policy (FASDEP), Trade Policy, Ghana Agricultural Investment Programme (GASIP) and other sub-sector policies for improving agricultural marketing. These strategies would be relevant in the anticipated agricultural marketing policy.

Public sector and private sector agencies are involved in regulation and facilitation of agricultural marketing, with the public agencies leading in the regulatory and policy formulation functions. The public-sector agencies derive their mandates from various legislations. Private sector and Development Agencies also play key roles in market facilitation

The legislation affecting agricultural marketing are the Plants and Fertiliser Act, Pesticide Control and Management Act, Fisheries Law and its amendment for Illegal, Unreported Unregulated fishing and, LI2217 for development of aquaculture, Standards Authority Law and Standards Board Amendment Decree, Weights and Measures Decree, Animals Act, Animal Diseases Act, Public Health Act, Biosafety Law, Sale of Goods Act and Contracts law. Bills for Plant Breeders and Warehouse Receipts are under consideration in parliament. However only the Plants and Fertiliser Act, Fisheries laws, Animals Act, and to some extent the Animal Diseases Act, specifically target the agricultural sector. This means that oversight and enforcement responsibilities of the other legislations involve several agencies. For example, the foods section of the Public Health act covers packaging, meat inspection and transportation, and labelling of agricultural produce that is consumed. Apart from meat inspection, for which responsibility is shared between the FDA and the VSD, the other areas appear orphaned especially at the primary production level.

Awareness of the general public and key market actors varies from law to law; level of awareness of Public Health Act is high but low for Standards and Fisheries Laws. Laws are enforced by registrations and penalties. Generally, low capacity of regulatory agencies in terms of staff numbers and resources (e.g. cost of testing and distribution of testing laboratories for agro-food safety) limit enforcement. In the case of fisheries enforcement is complicated by the number of agencies involved.

State of Major Agricultural Marketing Organisations

Associations studied are the peasant Farmers Association of Ghana (PFAG), Ghana Agricultural Producers and Traders Association (GAPTO), Vegetable Producers and Exporters Association of Ghana (VEPEAG), Livestock Breeders and Traders Association of Ghana (LBTAG) and small trader and farmer associations in Bolga. The associations advocate on policy

issues and facilitate marketing services for members. The capacity of exporter associations is higher than those for internal trade mainly because of the strict monitoring by importing countries and severe sanctions for noncompliance. Even so, Ghana has received warnings for breaches of quality standards.

Trader and farmer organisations also carry out facilitating roles for their members. The exporter associations have more educated and knowledgeable members and are therefore expected to understand issues, especially in relation to product standards. However, the system is just beginning to self-correct after several incidents of notifications of substandard produce exported to the EU. This suggests that if the domestic market begins to demand standards, traders will conform. Opportunities for formalization are emerging through linkages between farmers on the one hand, and formal aggregators and off-takers on the other. Agricultural commercialization models of nucleus-farmer outgrower linkages also offer opportunity for transforming the marketing system. Enforcement of standardized weights and measures is weak because of a) unwillingness of traders to use the measures and b) absence of a designated agency to enforce the appropriate law.

Recommendations

Recommendations are provided in the following areas:

1. Upgrading value chains and formalize marketing. Some models of upgrading value chains are working and these should provide lessons for upscaling or wider adoption in the pursuit of formalizing the marketing system.

2. Develop necessary marketing infrastructure. Infrastructure requirements of the value chains for upgrading are:
   - Fruits and vegetables – availability of seed of desired varieties; irrigation; cold chain; improved transportation (e.g. boxes for transporting tomatoes); packhouses in production hubs
   - Roots and tubers – appropriate transport and storage services; harvesters especially for cassava
   - Cereals – certified storage infrastructure enhanced with cleaning and drying facilities, awareness creation about aflatoxins and education on their control.
   - Legumes (soybean and groundnut) – same as for cereals
   - Meat – abattoirs, appropriate transport vehicles
   - Fresh fish – appropriate transport
   - In addition, policy should aim to increase professionalism of service providers and input dealers. Also, packaging should be developed for all commodities across board for internal and external marketing.

3. Align institutional arrangements for effective regulation and facilitation of marketing. There are so many organizations involved in agricultural marketing. The main recommendation is that MoFA and MoTI should constitute a permanent Technical Team to lead in the development and promotion of agricultural marketing policies, laws and regulations and define oversight responsibilities for their enforcement.

4. Harmonize existing agricultural marketing policies, strategies and regulatory frameworks. There are several policy documents and strategies within MDAs. These policies need to be

collated into an umbrella marketing policy, with a coherent implementation plan for harmony and effectiveness. There are also marketing laws with no assigned enforcement responsibility (e.g. weights and measures). There is a need to develop regulations for such laws and to assign oversight responsibility for their enforcement to an appropriate agency. The laws governing the livestock sector are dated and require urgent review. Given that law enforcement is weak, capacities of regulatory agencies for surveillance and monitoring should be built so that their presence in the field will be noticed.

5. Improve support services for marketing:

   - Mandate MSU of SRID to deliver wider range of marketing services to farmers, by backstopping the Agriculture departments in the districts. Marketing services units could be established in the technical directorates of CSD, APD, and PPME of MoFAD and at the district agriculture departments, to take up responsibility for facilitating marketing activities of farmers. MSU services target actors in formal market linkages models.
   - Regulatory bodies have low reach to their clients or target groups for monitoring and surveillance therefore delegating decentralized agencies to carry these activities can improve the situation. An alternative will be to out-source the services to appropriate third parties. This may require special expertise and criteria for engaging such third parties.
   - Vigilance in the monitoring for SPS compliance by exporters should be increased and penalties reviewed for severer sanctions. There is need for an independent study to identify loopholes that contribute to the export of sub-standard produce.
   - There is no professional requirement for trading in agrochemicals; therefore, the human resource capacity is very low. Training of dealers should be intensified. Monitoring dealers and enforcement of regulations is weak because of inadequate logistics of the EPA and PPRSD. GAIDA appears to be a strong lobby group therefore the association could be partnered to monitor its members but EPA and PPRSD should expand the registration of dealers to facilitate the effectiveness of GAIDA.

6. Support Farmer Organisations and Trade Associations to Pilot Value Chain Partnership Models in alignment with government strategy for agroindustry development. Trade associations involved in both internal and domestic trade need constant training on best practices in marketing. This should include training on how to identify market opportunities, and how to link up with major buyers. They should also be provided with technical and managerial support to organize production. This requires training by specialist extension agents. MoFA should therefore review its policy of a generalist extension agent considering the value chain approach it is pursuing. For exporters, there should strengthening of the SPS system and constant sensitisation on the laws of importing countries as well as on the consequences of non-compliance for their businesses and for revenue to the country.

7. Improve Access to Financial Services. Lessons from ongoing financing support programs should be harness for wider application. These include the Outgrower and Value Chain Fund of GIZ; Financing Agriculture in Ghana project of ADVANCE, and the Export Development and Agriculture Investment Fund. This should be supported with analysis of minimum financing requirements of various actors in the different value chains. The analysis should disaggregate requirements for working capital from investments.

1. INTRODUCTION

1.1 Background

Ghana does not have a comprehensive agricultural marketing policy[1] although farmers and the entire agribusiness sector are confronted with marketing constraints that could be addressed by appropriate policies. Smallholder farmers dominate the country's farming population; almost 50 percent of rural households have farm holdings less than two hectares (Diao, 2010) but smallholders[2] are not homogenous and vary by size, input use, technology and market sales (Chamberlain, 2008). Although contribution of smallholders is said to be large, there are not estimates of precise share of their output to national agricultural output. For these smallholder farmers, agricultural production is an important livelihood activity and their engagement in markets can increase their incomes and good returns to their resources. However, participation of smallholders in markets makes them vulnerable to risks and where the markets do not function well, they also incur high transactions costs. The power of the market notwithstanding, smallholder farmers are unable to tap its potential because of low levels of production, small units of producers, non-standardized produce and an environment of poor infrastructure and limited access to marketing services such as information. Market oriented production by smallholders will contribute to the commercialization, transformation and growth of the agricultural sector, thereby enhancing the sector's role in national development. Aggregators, warehouse operators, and processors for example, are critical in changing smallholder operations, therefore interventions that provide enabling legislative, regulatory and infrastructure environment can contribute to transforming smallholders and agriculture in general.

Characteristics of Ghana's smallholder farmers

- Ghanaian agriculture is overwhelmingly dominated by smallholders; many commodities—including cocoa, maize, and cassava—are produced predominantly on small farms.
- More than 70 percent of Ghanaian farms are 3 hectares (ha) or smaller in size. The smallest average holdings are in the south.
- Smaller farms tend to produce fewer commodities; farms of 2 ha or smaller produce an average of 3 crops compared to about 5 crops produced by holders with 4 ha.
- Maize and cassava are important crops for the smallest farms, because of their importance in the farmers' food security strategies especially under poor or variable market conditions.
- Farmers' market participation rates vary by holding size. Smaller farms produce fewer marketed crops and are less likely to sell the crops they do produce.
- Market participation also has spatial variation. The marketed share of farm products and the percentage of farmers who sell their produce tend to be lowest in northern Ghana.

Sources: Ghana Strategy Support Program – IFPRI (2007).

1.2 Objectives

The objective of the consultancy is to provide a comprehensive situational analysis of the agricultural marketing system in the country by assessing the strengths and weaknesses against the

[1] Set of principles and directions guiding decisions for promoting best practices in agricultural marketing to achieve desired national goals.
[2] See glossary for definition

current and future needs of the sector; and by so doing, identify potential interventions and directions for agriculture marketing policy reforms.

Specifically, the objectives are to assess:

i. Institutions responsible for regulating the market structure, conduct and performance (efficiency). These include: (a) Regulation of primary agricultural produce markets; and (b) Legal and regulatory provisions relating to storage, transportation, packaging, processing, buying/selling (weights and measures), pricing and quality specifications in formal agricultural markets such as warehouse receipts system, commodity exchange etc.
ii. Institutions providing marketing information and intelligence both for domestic and international trade in agriculture products.
iii. Agriculture marketing services provision such as marketing standards and quality certification, packaging, processing and value addition.
iv. Current state of major agricultural marketing organisations such as farmer-based organisations (FBOs) and cooperatives which represent the collective marketing interests of smallholder farmers in the country.
v. Institutions influencing foreign trade - imports/exports and their roles.
vi. Provide evidence-based analysis for formulating an effective and comprehensive agricultural marketing policy for Ghana.

2. METHODOLOGY

2.1 Analytical Framework and Concepts

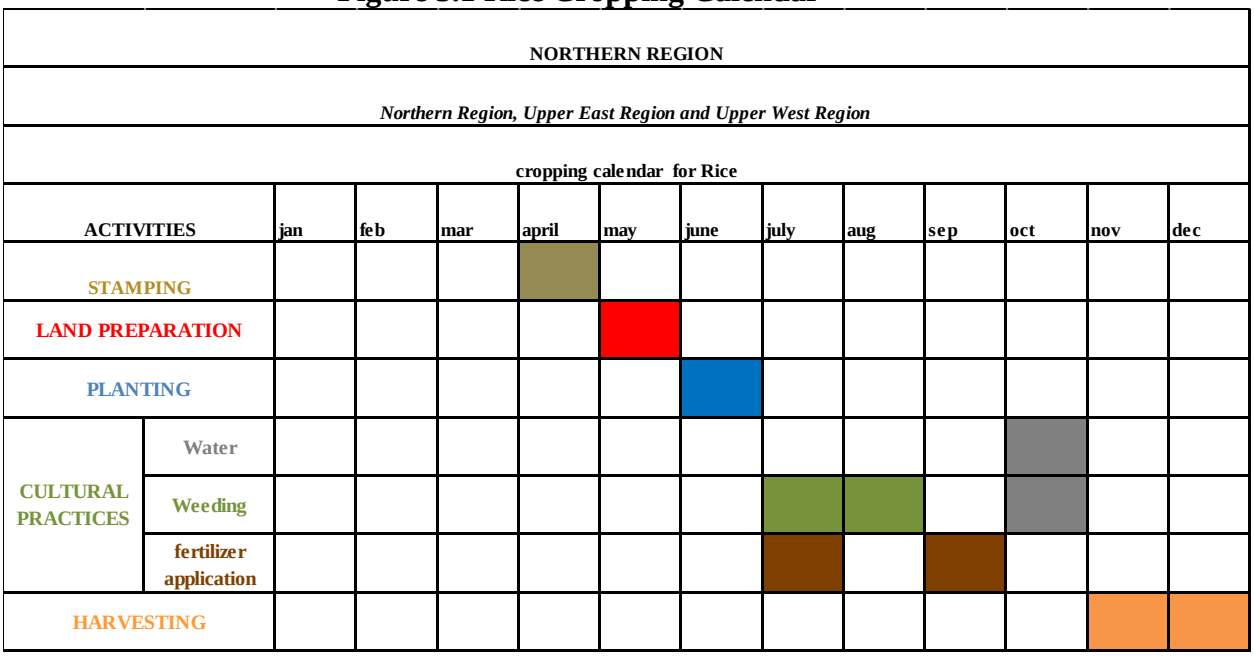
Agricultural[3] market is defined as a system or institution that coordinates the production, transformation and distribution of agricultural produce (Risopoulos et al., 1998). The purpose of agricultural marketing is to distribute agricultural commodities from producers to users and consumers. Market participants may engage in moving, storing, grading and processing the commodity in the expectation that this will enhance its value to consumers. Although these marketing services incur costs, producers, consumers and the overall economy gain where the benefits of specialized production and exchange exceed the costs of marketing and allow greater volumes and prices for producers and greater volumes and lower prices for consumers. In the context of Ghana where the agro-ecology[4] is varied and production is distributed spatially according to the requirements of crops and livestock, marketing distributes produce from surplus production areas to deficit areas. Ghanaian agriculture (cereals, roots and tubers, vegetables, pulses and fruits and vegetables) is also seasonal as production depends on the rainfall pattern therefore marketing functions such as storage, helps to reduce the seasonal impacts on price variability, and ensures food security across the country.

[3] Agriculture in this report includes crops (except cocoa), livestock and fisheries and activities can be on farm (farming field activities) or off-farm (transportation processing and all related activities downstream along the value chain)

[4] Agroecological zones (AEZs) are geographical areas exhibiting similar climatic conditions that determine their ability to support rain-dependent agriculture (Harvest Choice (2010). Agroecological zones of Sub Sahara Africa); accessed at: https://harvestchoice.org/maps/agro-ecological-zones-sub-saharan-africa

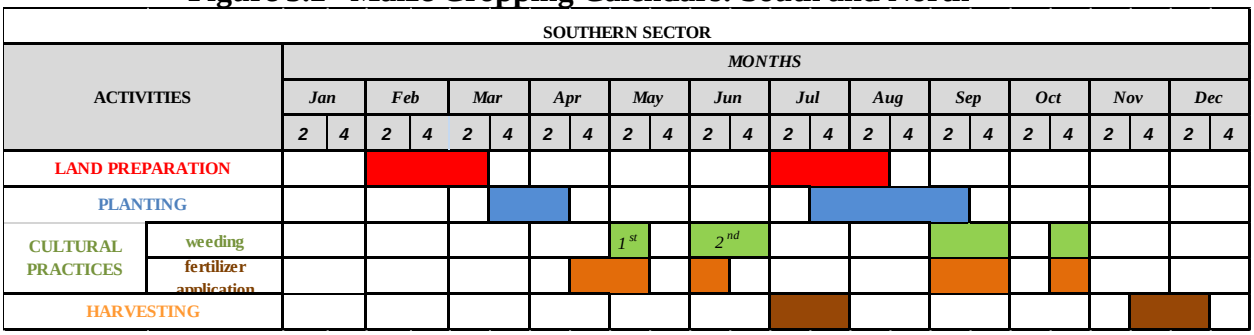
Figures 3.1 – 3.3 are the cropping calendars for rice, maize and groundnut in Northern region, and illustrate the seasonality of crop production. The report of the GLSS VI shows most households harvest and sell their crops from about mid-July to December (GSS,2014), which is consistent with the cropping calendars. Seasonality of production requires inter-temporal arbitrage and causes a deterministic price gap between harvest and lean season, owing to the costs arising from storing food between the seasons (Kornher and Asante, 2016).

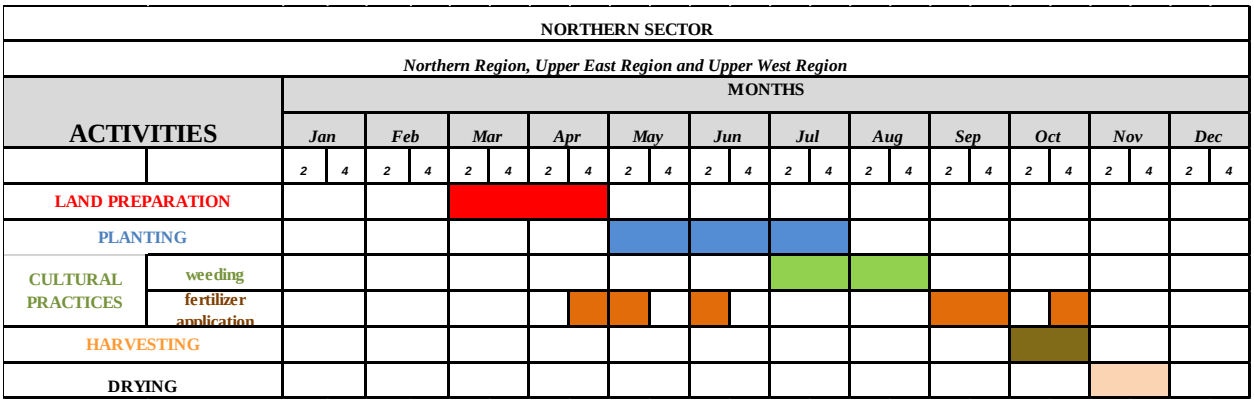
Figure 3.1 Rice Cropping Calendar



Source: GIZ (2011)

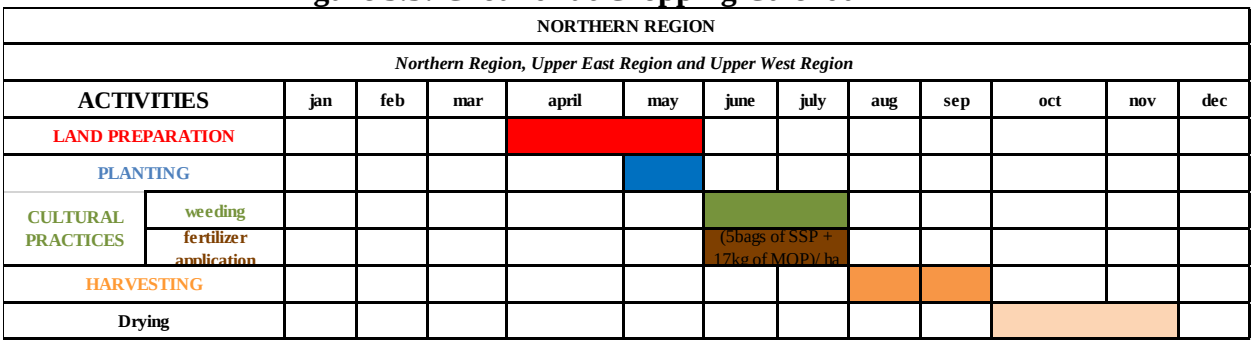
Figure 3.2 Maize Cropping Calendars: South and North





Source: GIZ, 2011. Cropping Calendars

Figure 3.3: Groundnut Cropping Calendar



Efficient agricultural marketing is therefore essential to the development of the agri-food system[5]. An efficient marketing system is one that performs the marketing functions in such a way that consumers are satisfied, trading parties are remunerated according to effort and equitably, produce is distributed at minimum cost, and the market delivers the desired produce quality. An efficient marketing system therefore contributes to food security an aspect of which is food safety. Various services are needed to ensure an efficient marketing system. Some of these services are facilitating while others are regulatory. Facilitating services include transportation, finance, storage or warehousing, packaging, market information, and certification. Certification stems from laws and regulations to ensure quality, food safety or fairness and competitiveness.

This situational analysis of agricultural marketing practices is based on the Structure, Conduct and Performance framework:

- Market structure refers to the number of sellers and buyers, their size distribution, the degree of product differentiation, and the ease of entry of actors into the market (Tomek and Robinson, 1990). Competitive markets are preferred because there are no dominant actors, no hindrance to entry into or exit out of the market and information about the market, especially price is readily available and easily accessible. This study assesses market structure by the numbers of producers and buyers.
- Market conduct refers to the behavior of economic agents within the market environment - buying and selling practices such as pricing behavior, price negotiation, coordination of market

[5] A food system is an integrated network of relationship between farming of food commodities, processing and consumption of food as well as the support services of for example, transportation, packaging. It includes the governance and economics of the system with the objective of sustainability food security and nutrition

information, and trade and production credit. In other words, market conduct refers to market actors' pattern of behavior in executing its pricing and promotion strategy and its response to the realities of the market it serves. Conduct is assessed by the marketing channels, pricing practices, grading and use of measures, stocking, and transportation.

- Market performance is an assessment of the quality or the standard of a marketing system. Indicators of performance are price levels and variability, costs and output (Bressler and King, 1970), market integration and the producer's share of the consumer price. Performance is also measured by efficiency, which is the effectiveness with which the marketing system responds to shocks, by transmitting information among the different participants of the market. This is commonly assessed by market integration – the connectedness of source (or producer) and destination (or consumer) markets. Efficiency is assessed by market integration.

Market structure therefore determines market conduct, which in turn determines the level of market performance (Caves, 1992).

2.2 Research Design and Methods of Analysis

This is a qualitative study designed as a desk review and complemented with interviews. The literature reviewed includes journal papers, thesis reports, reports of development projects, value chain profiling reports prepared for the Ministry of Food and Agriculture. Interviews were conducted with key informants of relevant public and private agencies involved in agricultural marketing either as regulators or facilitators. A list of institutions interviewed is presented in Annex 1. Focus group discussions were held with farmers and traders in the Upper East and Northern Regions for tomatoes, cultured fish, small ruminants, and rice.

3. FINDINGS

3.1 Introduction

The findings of this study point to an agricultural marketing system that is dominated by the informal sector; the structure of market and transactions along the various commodity value chains depends on the types and capacities of buyers and the relative power of the sellers and buyers. This section of the report presents an overview of Ghana's agricultural marketing system as a whole, assessing the marketing chain, practices of market actors (production, pricing, grading and standards, market information, packaging, stocking, and controls of market entry by trader organisations). The effects of these on price variability and transmission are then assessed. A description of ongoing efforts to upgrade commodity value chains is then presented as the way to engage smallholders in formal agricultural markets.

3.2 The Agricultural Marketing System

3.2.1 Structure

Agriculture in Ghana is predominantly smallholder and this largely defines the structure of the market. At the farm gate, there are many more sellers than buyers. According to the Ghana Statistical Service (GSS) (2014), 3.4 million households operated a farm in 2011/2012; 83 percent

of these households are located in rural areas. Similarly, nearly 2 million households raise chickens while a million households rear goats. Livestock rearing is concentrated in the rural savannah areas which account for 63 percent of cattle and 80 percent of guinea fowl. The concentration of agricultural production in rural areas has implications of access to the production areas by buyers, availability of transport services, ease of movement of produce, and costs because of poor infrastructure.

Market access has been defined as the opportunity for producers to participate in a market to their advantage and this requires that there is a market; that the farmer is able to obtain information regarding profitable opportunities for participating in that market; and that the farmer is able to take advantage of those opportunities (Risopoulos et al., 1998). Individual communities, households or farmers in remote areas may have particular difficulties in moving themselves and/or their produce to main roads or local agricultural marketing centres. Remoteness is therefore not just a matter of distance but also of transport infrastructure and is reflected in higher unit transportation costs. Marketing in remote areas is also characterized by limited information on, and uncertainty of prices, demand and supply. A study on remoteness and maize price volatility in Burkina Faso (Moctar et al., 2015) found that maize price volatility is greatest in remote markets and that maize-surplus markets and markets bordering Côte d'Ivoire, Ghana and Togo tend to experience more volatile prices than maize-deficit and non-border markets. Therefore, improving road infrastructure would strengthen the links between rural markets and major consumption centres, and thereby stabilize maize prices.

Because of the above challenges in production area, the markets at the farm gates have large numbers of farmers/sellers, and fewer buyers. This has implications for relative market power of actors, especially in pricing as shown in the next section. However, there can also be more buyers than sellers in times of the year when produce is scarce. During these times, produce is held by speculators and not the small producers. Ghana's agricultural production is highly seasonal and therefore characterized by periods of glut and scarcity, exacerbated by limited processing and storage infrastructure.

The market access challenges of many and widely dispersed smallholder farmers has led to the creation of periodic markets in rural areas. Farmers are able to sell small quantities in these markets in response to their cash needs. Once delivered to the market, the farmer must sell the produce because of the cost of returning the produce home and the need for cash. At this point arbitrager between buyers and farmers drives prices down to the disadvantage of the latter. Agricultural produce is also marketed along major trunk roads by rural traders. No research on the extent to which this mode of selling affects incomes of actors (farmers and traders) has been identified.

3.2.2 Conduct

The discussion on conduct of agricultural marketing covers the marketing chain, nature of transactions (including relations between sellers and buyers), post-harvest practices, pricing, grading, and use of measures), transportation and packaging, market information, quality assessments, and financing arrangements. Examples from specific value chains including maize, rice, soybean, cassava, tomato, vegetables, mangos, poultry (chicken) and farmed fish.

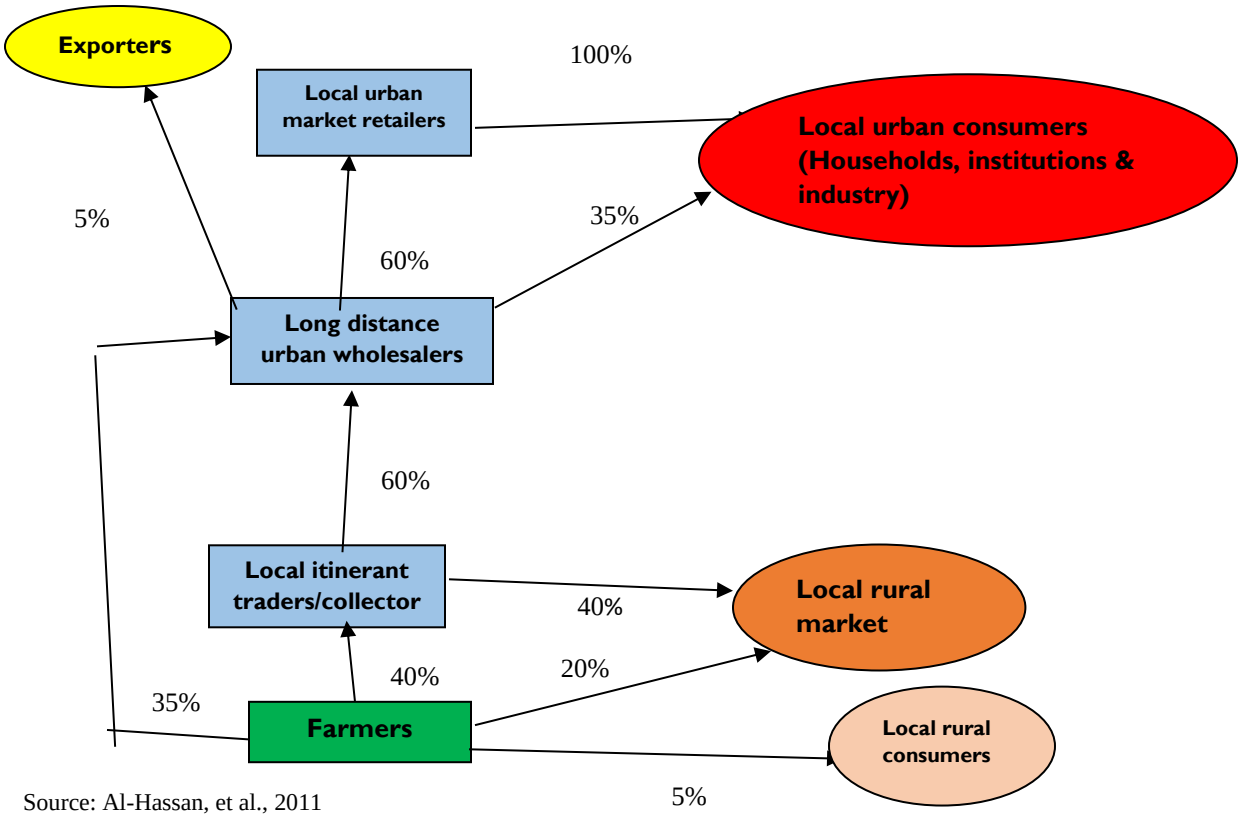
3.2.2.1 Marketing Chain and Nature of Transactions

Agricultural products include raw produce (grain, roots and tubers and fruits and vegetables), semi-processed products (doughs, flours/powders, pastes, oils) and finished products (prepared foods, chopped vegetables). Traditionally, the marketing channel has been from farmer to a 'middleman', to wholesalers, to retailers and to the consumer. The middleman is based in the production area and buys (collects/aggregates) produce from farmers and sells to larger traders (wholesalers). The wholesalers break the bulk and distribute to retailers, who then sell to final users. The wholesalers may also sell to processors. Similarly, processors can procure their raw material directly from farmers (e.g. cassava, soybean). Transactions in agricultural markets range from a continuum of impersonal spot markets to vertically integrated markets (Kwadzo and Srofenyo, 2012). The dominant practices in Ghana, as in many other African countries (Eaton et al, 2007) are the personalized spot market (face to face transactions between sellers and buyers) and hybrids of informal contracts which are facilitated by agents/brokers. Brokers provide information on availability of produce, sources of produce, and prices; they may also negotiate prices with farmers or collectors on behalf of larger traders/aggregators. The dominance of informal spot market transactions is itself due to the informal rules mediating transactions in African agricultural markets (Eaton et al, 2007).

Figure 3.4 illustrates a typical marketing chain for food crops in Northern Ghana. The local itinerant trader collects/buys from the farmer sells to another trader in an assembly market either in the community or in the district capital. The larger traders in assembly markets aggregate produce either from farmers or smaller traders/aggregators, and wholesale to processors or retailers (traders who sell in small quantities to consumers)[6]. This channel is common for internal marketing of maize, rice, cassava, yam, legumes, and fruit and vegetables. Processors procure from farmers or wholesalers.

[6] The percentages in figure 1 are estimates of proportion of actors' produce that pass through a channel.

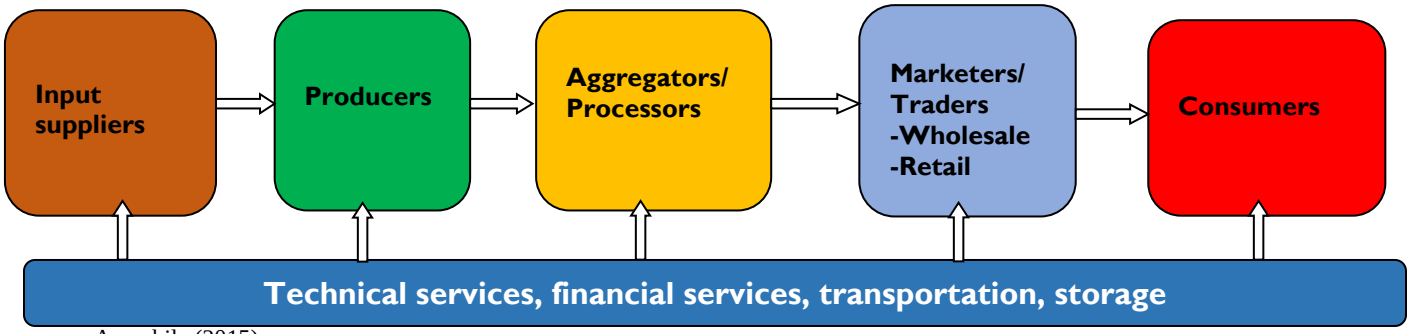
Figure 3.4: A typical marketing channel for food crops in Ghana



Source: Al-Hassan, et al., 2011

Figure 3.5 illustrates the traditional value chain for locally produced rice in northern Ghana. Just like the above case of staple food crops, there are no formal relationships between the value chain actors and service providers. Collectors/aggregators buy paddy from farmers and assemble for millers (off-takers); aggregators may add value by cleaning, sorting, grading and packaging. Processors add value by milling paddy rice into milled rice; they may also aggregate to ensure safety stocks. Rice post-harvest activities in northern Ghana is dominated by women. They buy the paddy, parboil it and custom mill at small milling centers owned and operated by men. The processors sell the milled rice in the open market to individuals or households. Those who trade in milled rice (wholesalers and retailers) buy the milled product, and distribute with or without packaging. In the coastal and forest zones, most farmers process their paddy for sale; this is not the case in northern Ghana (Ayambila, 2015).

Figure 3.5: Value Chain of Locally Produced Rice



Ayambila (2015).

In recent times, larger and formal aggregators have emerged from institutional innovations to procure produce for agro-processing or export firms. These arrangements are discussed in section 3.3.

3.2.2.2 Agricultural Marketing Practices

The quality of produce marketed is determined by good agricultural practices, from seed selection to harvesting and post-harvest management. Marketing practices assessed cover on-farm and post-harvest and include pest management and use of pesticides; harvesting (including cleaning and drying); storage; packaging; transportation and handling. The assessments are made for grains, roots and tubers, fruits and vegetables, livestock and meat and aquaculture fish.

Pesticides application tend to be higher on legumes, fruit, vegetables, coffee and industrial crops than in other food or subsistence crops like root, tubers and cereals (Gerken et al. 2001). In a study of pesticide use on vegetables, Horna et al (2008) found high level of use pesticides among farmers, and ignorance of the types of agrochemicals used. Also, use of protective clothing, especially gloves and goggles, was low. Pesticide residues, including DDT, have been found in the breast milk and blood of vegetable farmers. A more recent study on the Ghana vegetable sector (GhanaVeg, 2014) also reports of high incidence of pests and diseases and inappropriate use of chemicals or soil fertility management. Vegetable producers use excessive amounts of pesticides and combinations of unsafe chemicals (Al-Hassan et al., 2010; Van der Maden, 2014). As a result, vegetables produced in Ghana have been excessively treated with pesticides (Van der Maden, 2014).

Wrong choice of pesticide and higher than recommended application rates add to costs, and can reduce effectiveness of the chemicals as pests and disease organisms develop resistance, leading to low returns to the use of the agrochemicals. Pesticides are used in grain storage although cowpea crop may be stored in the field.

Agricultural marketing is a highly informal activity, which is difficult to regulate or even facilitate. Therefore, improper post-harvest management (harvesting, drying and storage) of produce is rampant, raising risks of exposure to Aflatoxin contamination of maize, groundnuts and dried cassava. Soybeans become rancid from humid storage environment.

Drying maize in the transition zone is a challenge because harvesting coincides with the major season rains when sunshine is low, humidity is high and maize can be exposed to rain during drying - conditions that favor the growth of mycotoxins. Akowuah et al. (2015) report on practices that aggravate aflatoxin contamination in the transition zone. Farmers delay harvesting and this exposes matured maize cobs to rain; famers also heap harvested maize cobs on the field and use crude methods of testing dryness of grain such as cracking maize grain with the teeth. At market centres, maize is stored in wooden stalls with no proper ventilation; traders also store maize temporarily in the open using tarpaulin; although the tarpaulin prevents contamination with foreign matter such as stones, it promotes heat build-up and moisture re-absorption. The authors report that grains from farms in Ejura showed aflatoxin levels that were below detection (less than 1ppb), but samples taken from markets in Ejura and Agbogbloshie had high levels of aflatoxin. The researchers conclude that practices of farmers and traders have direct effect on maize quality, and that aflatoxins build up from farm level through the marketing chain. Studies by the Food Research Institute also report high aflatoxin levels, varying from 20 to 355 μg/kg from silo-stored maize and from 0.7 to 313 μg/kg in fermented maize-dough collected from major processing sites[7]. Groundnuts are also subjected to similar practices and have high levels of mycotoxins.

Cassava is also sun-dried or dried on platforms over fire into kokonte. Wareing *et al*. (2001) found that mould growth during processing or storage of kokonte was a problem during season June and July. Most producers and market traders preferred non-moldy kokonte, although many would consume a moldy product. Like maize and groundnuts, kokonte is stored in jute sacks and infestation by weevils is very common. Akowuah et al. (2015) also report that farmers and traders had no knowledge of aflatoxin and that traders reasoned that eating contaminated maize has no health effects because the maize is processed and cooked thoroughly during meal preparation.

3.2.2.3 Pricing

Pricing of agricultural produce is largely dictated by supply and demand. Farmers may price produce based on production cost plus a mark-up. However, the price received is based on bargaining with traders at point of sale. From farmers' perspective, traders collude to dictate prices in a normal season. However, in times of scarcity when farmers or sellers should have an upper hand in bargaining for price, information asymmetry in favor of traders gives the latter stronger bargaining power.

New production and marketing arrangements involving, for example, nucleus farmers and aggregators give room for price negotiation between producers and buyers. See section 3.3 for details of arrangements that are working in Ghana and elsewhere. These arrangements involve contracts which allow renegotiation when negotiated price falls below price prevailing in the open market (e.g. Savanna Marketing Company and soybean farmers). The essence of renegotiation is to reduce side-selling by farmers. The new developments are driven by the desire of off-takers to have quality produce (e.g. soybean processors) in right quantities, and the efforts of development projects (Northern Rural Growth Project, ADVANCE- USAID, Market Development for Northern Ghana), towards facilitating market access for smallholders.

[7] MoFA and World Bank (nd). Ghana Food Safety Action Plan Final Draft accessed at: http://siteresources.worldbank.org/INTRANETTRADE/Resources/Ghana_Food_Safety_Action_Plan_Revised.pdf

3.2.2.4 Grading and Use of Standard Measures

Standardized grading of produce is rare in the marketing of agricultural produce in Ghana. Generally, grading in buying and selling is by appeal to the eye. Retailers are more concerned with sorting and grading than wholesalers. Typically, traders sort produce by size (small and large fruits of tomato or onion); type (variety, e.g. Bawku Red and imported onion varieties; parboiled and straight-milled rice) and source (imported and local rice; Burkina and Tono tomatoes). Grading by type and size is common in fresh fish marketing. Tropo Farms has 3 grades of tilapia based on size/weight. For fruits, grading is by whether the produce is fresh without signs of damage (due to for example, rot or bruises). Also, over-ripe fruit is likely to be sold at a lower price so it can be disposed of more quickly. Premium price for quality is rare or low. In Bolgatanga market, Navrongo rice, perceived to be of higher quality sold for GHC1 more per bowl than other types of rice. In the same market, tomato was sorted by variety but pricing was based on wholesomeness. There is therefore no incentive for grading at the farmer or wholesaler level. Generally, it is perceived that there is no price premium for quality; however, there is evidence consumers enjoy discounts on weevilled cowpea. Estimated discounts on cowpea prices in Senegal, Cameroon, and Ghana ranged from 0.17 to 2.3 percent of the average annual price per hole (Lowenberg-Deboer and Ibro, 2008, cited in Salifu (2012).

Ghana Standards Board has developed grades for grains; maize for example has 5 grades based on quality characteristics such as level of contamination with foreign matter, mould, moisture content, discoloration, and malformed grain. However, these standards are used by only formal marketing agencies because their off-takers demand quality. The National Food Buffer Stock Company (NAFCO) has had bad experiences where farmers deliberately mixed chaff and stones with their produce. They have had to resort to buying from registered produce marketing companies who treat/condition the produce to the quality desired by the company for a commission. The perception of a major farmer association is that the procurement companies do not buy from farmers but rather from the market so farmers do not benefit from the guaranteed minimum prices offered by NAFCO.

Despite Ghana having a law on the use of standard measures in trade, (Weights and Measures Decree (NRCD 326, 1975)), the use of standard measures in agricultural marketing varies along the marketing chain and for different products. Produce is generally sold by volume of various sizes - baskets, bowls, sacks, heaps, are examples of measures used by traders. The same measure may have different sizes depending on the level or point in the marketing chain. A bag of maize in a rural market holds about a third more produce than a bag in an urban market. Bags are sold by “bush weight”, which varies according to location. At the farm gate, where bags are typically filled by the traders or their brokers/agents, up to 170 kg of maize grain may be stuffed into a bag, which is sealed by having an extra piece of cloth sown on as a “cap”. At local assembly markets the grain is re-bagged (by the seller), reducing the weight of a bag to around 150 kg. Risopoulos et al (1998) report that in Techiman market, maize grain is bagged by the seller (in the presence of the buyer), which further reduces the weight of a bag to around 120 kg. (In measuring grain by the bowl, the grain is not only heaped, but the trader (buyer) wraps their hand around the bowl to hold more grain. The measures approach their true volumes in urban markets. In the case of yam, which is sold by the 100 tubers, at the farm gate the measure is 110 tubers; then at an assembly market, the measure is 103. The extra pieces are for costs incurred by the buyer. The rationale for using large measures at farm gate or in rural markets is to cover high transaction costs

of going out to production areas where roads are bad, and risks of vehicle break down, theft, spoilage of produce are high.

Grading and use of standard measures is accepted practice in export trade and in internal marketing with nucleus farmers, aggregator firms, industrial processors and institutional buyers such as NAFCO or World Food Program. Farmers, traders in the open market, and other stakeholders will need to be sensitized, incentivized and convinced about the benefits of grading and use of standard measures in marketing. The strategy will be to create awareness about the standards developed for agricultural produce, persuade farmers and traders to use the standards and follow with enforcement of the law. For exported produce the incentive for players to invest in quality and grading is access to the market; non-compliance is total rejection at the end market. For domestic market, incentive will be reward in a price premium for quality and access to large buyers. Therefore, standards can be enforced for produce delivered to institutions (schools, hospitals, security agencies, etc.) by limiting access to these buyers according to compliance with required standards. This will require close and honest monitoring by a relevant institution. Presently no institution is identified as being responsible for enforcing standards.

3.2.2.5 Packaging and Transport

Proper packaging can maintain product quality after harvesting and increase shelf life. There is no prescribed packaging for internal marketing of agricultural produce. Packaging is rudimentary and includes jute sacks for dry grain; plastic bags for fish and meat; re-used packaging material (e.g. plastic containers for oil); wooden crates for tomatoes; sacks for vegetables and cassava. The packaging is not labelled. The Food and Drug Authority is mandated to register packaging for processed food (imported and local). However, this service does not cover raw agricultural produce. Besides, the Authority is developing capacity to test and regulate packaging materials.

Produce for the export market are packaged in cardboard boxes with prescribed dimensions for fruits and vegetables. However, the packaging industry is not well developed. Poly Kraft, Ghana Carton and Packrite are the leading local packaging companies in Ghana. However, the large-scale growers, e.g. mango prefer to import packaging because of the lower quality of locally manufactured packaging (Zakari, 2012). Locally manufactured packaging has hand-folded corners, which are weaker than the heat-glued corners of imported packaging. Packages for exports are however labelled at the minimum with name/brand, type of produce and country of origin. In recent years packaging, may also have the Ghana Green Label to indicate compliance.

On transport, produce is head loaded, or transported on bicycles, push trucks or by motorized tricycles from farm to market or the home. Traders do not own transport; haulage on long distance is by general purpose trucks, and passenger buses. Traders of bulky produce such as yam, tomato, and cattle, jointly hire general-purpose trucks for transport service. Neither fresh meat nor fish is transported in cool vans; however, fresh fish may be transported frozen or chilled with ice (See interview notes with fish trader in Appendix 3).

Transport charges vary according to distance and the condition of the road, which also determines the availability of transport services. Table 3.1 demonstrates that transport costs are lowest on major trading trunk roads even over long distances (Accra – Tamale; Kumasi-Accra; Kumasi – Tamale and Wenchi – Accra and Wenchi – Kumasi). As reported from Burkina Faso,

poor road infrastructure exacerbates price volatility (Moctar et al.). The additional challenge traders and transporters face is the need to have full load in and out. Recently, tomato traders had to negotiate with transporters to agree to charge for partial load (Robinson and Kolavalli, 2008).

Table 3.1: Transport Costs on Selected Roads in May – June, 2011

Route	Price/Mt (GHC)	Distance (Km)	Cost GHC (Mt/Km)
Wench – Techiman	35.59	29	1.23
Kumasi – Ejura	60.16	98	0.61
Wenchi – Sunyani	53.29	97	0.56
Kumasi – Nkranza	60.16	150	0.40
Kumasi – Wenchi	46.28	155	0.29
Wench – Accra	88.98	427	0.21
Kumasi – Accra	46.28	272	0.17
Kumasi – Tamale	57.83	382	0.16
Accra – Tamale	80.98	654	0.12

Source: Kornher and Asante (2016).

3.2.2.6 Market Information Services (MIS)

The purpose of an agricultural market information system is to create transparency and facilitate trading activities to the benefit of producers, traders and consumers. Market information includes prices (products and inputs/services), price trends and forecasts, sources of produce, production forecasts and critical conditions affecting production (forecasted weather conditions and its likely impacts), requirements of the market (quantities and quality), and policy information including quality requirements such as maximum residual levels of pesticides, and any events that could affect demand and availability of produce on domestic market. The frequency of production of specific data depends on the type of data and the frequency of change (e.g. price data change daily as compared to production data which change seasonally).

Market actors in Ghana rely on various sources of information. Price information is the most common information sought by market actors. Farmers access price information from the market through other famers and traders. Traders also obtain price information from urban markets and collude to set prices in the markets - rural wholesale/assembly and urban market centres. These information sources and exchanges are informal. Traders and farmers access information from public and private market information service providers via open media. Information from these formal sources can be obtained on request but at a cost if the source is private.

Trade associations (VEPEAG, GAPTO and LBTA) report that they support their members with market information. The range of information they provide includes supply and demand outside Ghana, and policies of importing countries on specific products (e.g. use of antibiotics for livestock; and approved pesticides and residual limits). The associations relay information concerning their trade or sector to members; such information is disseminated at workshops organized by public institutions and development organisations.

Farmer organisations also access price information for their members. Farmer cooperatives of the Eastern Corridor under SEND-Ghana accessed information from Esoko, a private market information service provider. SEND subscribed the farmer groups on to the Esoko platform and this enabled farmer to receive alerts on price changes. There is an emergence of private market information service providers; these are discussed in section 4.4.

3.2.2.7 Stocking Practices

Stockpiling occurs with dry grains. The spatial distribution and storage behavior of farmers depends on the seasonality of production. Sales of produce by farmers is seasonal and peaks after harvest, only for food deficit farmers to repurchase produce at the end of the marketing year (GSS 2007; Chapoto et al. 2014). Therefore, stocks must be held by traders sometime and somewhere during the year to facilitate buy-back of produce by farmers (Kornher and Asante, 2016). Motives for storage by traders include speculation on high future prices, safety stocks by processors and traders to ensure supplies are available to meet demand of their customers, and aggregation stocks held over short periods by aggregators who mop surplus produce from farmers to supply to assembly markets and off-takers.

Given the seasonality of production and prices, speculation on a future price increase is the most common motive for storage. Speculators would choose to provide additional storage as long as the marginal costs of storage do not exceed the expected return from storage in the subsequent period. Anticipated stocks, held in anticipation of a future change in demand, are a variant of speculative stocks (Minner, 2000). For example, rice traders in Ghana keep anticipated stocks for Christmas and Easter to satisfy the increase in demand (Kornher and Asante, 2016).

Safety stocks are kept to cover late and inconsistent deliveries, (Kornher and Asante, 2016) and to reduce costs associated with downtime and loss of goodwill as a result of running out of stocks. The authors also report that safety inventories kept by processors would sustain production for 1 – 2 months. This means that processors need adequate warehousing (space and management of stored grain). Processing firms keep safety stocks.

Small-scale traders at village and town level play an important role in aggregating or mopping up farmer surplus. As described in the section on marketing channels, aggregators buy larger quantities of produce from village and town markets and urban markets to supply institutional buyers such as NAFCO and WFP (Kornher and Asante, 2016). They therefore need to hold inventories for brief periods as they bulk the produce.

Traders stock up maize from August to September (major harvest) and November to January (minor season harvest); these are the periods when prices are lowest. The pattern is the same for local rice, stocks of which build up between November and January and released between March and June. On the other hand, stocks of imported rice have less intra-seasonal variability[8].

Storage by farmers and traders over long periods of time is limited by poor or inadequate storage infrastructure, liquidity constraints, inadequate access to drying and cleaning facilities. An inventory of commercial post-harvest infrastructure identified about 18700 facilities, 70 percent of which are warehouses. The warehouses have rather low levels of utilisation due to lack of trust in them by farmers. The survey also inventory also includes 76 abattoirs meaning that only 36 percent of the 212 districts have abattoirs. In addition to inadequate numbers and low capacity

[8] Kohner and Asante, 2016

utilisation, some of the facilities need additional enhancements such as drying platforms and cold stores. Also, the private storage facilities tend not to be registered, and the human resource also have little if any training in post-harvest management.

Therefore, public policies and programs that encourage easy credit access from financial institutions to maize traders and farmers to finance stored maize or to hold maize stocks till the post-harvest season may be an appropriate means of promoting or encouraging maize storage among traders and farmers (Armah and Asante, 2005). In addition, owners of private infrastructure could be supported with financing guarantees for them to invest in upgrading their facilities. They can also benefit from technical and managerial training to enhance quality of their services. This is particularly important for the successful implementation of the warehouse receipts scheme for grains (cereals and pulses).

The handling (transport, storage and display) of fresh produce (fruits, vegetables, fish and meat) in internal marketing is especially problematic. There are no cold chains, no appropriate or adequate storage facilities nor special transport vehicles for fresh produce. About 20 to 50 percent of vegetables are lost before produce reaches the market because of exposure to the sun and heat, bruising through inappropriate transporting, absence of cold chain and poor packaging (GhanaVeg, 2014). Fruit exporters such as Blue Skies, BOMARTS, FMSL ITFC, VREL, and Golden Exotics have cold chain systems for the produce.

So, investments in cold chains, appropriate transport, awareness creation and training are needed for the internal fresh produce value chains. Public sector can facilitate access to investment funds by private sector and support the latter to train and create awareness among the value chain partners. This will however be a challenge if marketing of the produce will continue to be dominated by open market traders.

3.2.2.8 Control of Market Entry

Unlike the assemblers and commission agents who act individually, wholesale traders in some urban centres organize themselves into associations around commodity trader associations (e.g. yam and cassava sellers, grain sellers, tomato traders, citrus sellers, etc.) under the leadership of "market queens" (Langyintuo, 2010). These are welfare associations but have strong influence in the marketing of produce through organization of transport, provision of information and most importantly, control of produce into markets in cities. Where traders are successful in forming an association, they have the power to collude to fix prices offered to farmers. This limits competitiveness of the market as it tilts market power in favor of traders. Box X describes the practices of itinerant traders and market queens in the tomato value chain in the Upper Region. This is typical of perishable produce including yam, plantain, cassava, onion.

There is no regulation on handling and transportation of produce, and the control of produce into market centres. MMDAs are responsible for providing market infrastructure, ensuring sanitation for which traders are taxed.

Box 1: Phenomenon of Trader Associations and Market 'Queens'

The influence of trader associations in agricultural marketing is most evident in the marketing of tomatoes from the Upper East region. Actors in the tomato market chain in the Upper East region are farmers, sorters or packers, local traders, traders from urban markets in the South, market associations and market queens based in southern markets, the produce on the farm, brokers or middlemen between farmers and itinerant traders, loaders (load on-farm and off-load in destination market) and transporters/truck drivers.

Buying at the farm-gate is largely by itinerant traders who then supply to wholesalers in urban markets in the south (e.g. Kumasi and Accra) on credit. Interpreters liaise between traders and farmers and although they are needed to bridge the language barrier, they function as agents for the traders and will bargain with farmers on behalf of traders. Farmers are dependent on them to access buyers from the south. This is one barrier to accessing the market by the farmer. 'Usually, before the traders arrive, the interpreter would have done some homework, consulting his colleagues to find out where the tomatoes are ready so that he can take the traders straight there when they arrive on the scene' (Adimabunyo, 2010, pg 76).

Leaders of traders in urban markets are called 'market queens' and they have a lot of power relative to other actors in the chain. They control market supply by physically limiting the direct market access of farmers, and traders outside their associations. They also have a delivery schedule for the itinerant traders to deliver tomatoes to the market. These measures limit access to the larger urban open markets to only their members of the commodity traders' association. The rationale for this control is to avoid flooding the market with a perishable produce and driving down prices which will in turn reduce their profits.

There are no storage facilities for fresh produce in markets so whatever is delivered should be sold. On the other hand, when prices at farm gate are rising towards the end of the season the market queens reduce the number trucks authorized to take tomatoes from the farms. Either way, the prices at farm gate do not reflect supply at that level. The situation has remained despite attempts to release the stranglehold of market queens on the tomato value chain. Awo provides examples of instances where tomato traders in Accra markets have thwarted efforts by public organisations to provide access to farmers to sell their produce in those markets.

Traders associations provide a range of services to their members. These include organisation of transportation and negotiation payment terms; controlling the volume of supplies to avert risk of a glut. They impose delivery schedules so that itinerant traders can only discharge goods on specific days. They claim that control of supplies is needed because of the absence of storage facilities, and the need to maintain sanitation in markets

Source: Awo Adimabuno Martha (2010).

3.2.2.9 Tomato Marketing and Value chain[9]

Annual per capita consumption of fresh tomato is about 24kg and much of this is produced locally. Fresh tomatoes are imported during the off-season of about late November to May. Nevertheless, imports of processed tomatoes (mainly paste and puree) is high; the country is the second highest importer of tomatoes in West Africa, after Nigeria. In 2012, Ghana imported 95,000 metric tons compared to 147,000 metric tons of tomato imports by Nigeria.

The key end market for Ghanaian tomatoes is the domestic market where the primary market segments are the open-air wholesale and retail markets and a much smaller, but growing, supermarket channel. Supermarket channel is dominated by imports due to the higher quality of imported tomato and longer shelf life. The average yield per hectare of tomato, under rain fed conditions, is 7.2 metric tons which is only 48 percent of attainable yield. Annual value of tomato output is about GHC135 million. Production has seen phenomenal growth and FAO data shows that between 1961 and 2013, Ghana had the highest expansion in area planted to tomato compared to neighboring countries of Benin, Burkina Faso, Togo and Cote d'Ivoire (Akudugu, 2015). However, yield growth has been low, increasing from 5.5 metric tons in 1961 to 8.1 metric tons

[9] Based on Akudugu (2015). Tomato Value Chain Profiling. Unpublished. MoFA/FAO

per hectare in 2013 (an average of 0.9 percent per year). Farm size is less than 2 hectares per farmer and yields are low due to a number of factors including high incidences of pests and diseases, unfavorable rainfall patterns, high night temperatures, use of low quality seeds, poor soil fertility. Production is highly seasonal. Peak production is in the wet season when the incidence of pests and diseases tend to be high so yields are low. Even so, there is always a glut during this period with prices falling below famer expectations.

The value chain actors are **s**mallholder farmers, brokers/Aggregators, Wholesalers, Open-air/roadside retailers, supermarkets and small grocery stores, processing companies and institutional consumers/buyers. The dominant value chain is that for the open-air market which carries 80 percent of locally produced fresh tomatoes (Akudugu, 2015). Transactions between actors in this chain are informal. Product quality requirements are not sophisticated and there is no enforcement of sanitary and phytosanitary standards in this channel. Transporters are the main services providers in the value chain but others are microfinance companies, extension services and tractor service providers. Middlemen (interpreters, brokers) are also very active in the marketing of tomatoes at the farm level (see Box 1).

Farmers are not organized. Farmer associations are self-help groups that are not marketing oriented. As a result, they have weak bargaining power relative to other actors especially the brokers and wholesalers. The bane of producers in selling their tomatoes is the dominance by trader networks (Market Queens as discussed Box 2). This phenomenon is typical for fresh produce, including fruits and vegetables, yam, and cassava. Traders on the other hand do not trust farmers who tend to breach contractual agreements with traders because the farmers are always looking for a better price offer.

Brokers/Aggregators act as a gateway of information between the wholesalers, small to medium traders, supermarkets and the producers. Brokers do not add any value to the product and only mediate in transactions between the producers and the buyers. The brokers/aggregators have well-established network of buyers and sellers. These are what Akudugu (2013) refers to as translators in the Upper East.

Wholesalers buy the bulk of the produce from farmers and in some cases brokers/aggregators and supply the product to other wholesalers and retailers mainly in the open-air markets in large cities and towns.

Supermarkets sell both local and imported fresh tomatoes and tomato-based processed products. This chain is the most regulated one in terms of quality, sanitary standards and supplier requirements. The supermarkets have more stringent requirements, including, longer shelf life (at least 1 week), timely and consistent delivery, quality certifications and direct supply from farms or 'single point transactions'. The capacity of local producers needs to be built to improve their product quality and consistency of supplies since competition from imports is strongest in this channel.

Small grocery stores are small convenience stores and kiosks that trade smaller volumes and offer less variety at relatively higher prices. Many of these stores have limited shelf space and do not offer full range of fruits and vegetables.

Key processing companies are currently out of operation because of strong competition from imports, high prices of tomatoes, inadequate supplies and unsuitability of varieties for processing. Smaller processing firms (Tip Top, Tomafresh) are in operation but on smaller scale.

They prefer to collect fresh tomatoes from farmers using a schedule that ensures consistent and sufficient supply from growers. Therefore, the firms sign contracts with FBOs ahead of harvesting.

Institutional buyers are the schools, hospitals, restaurants, and hotels. These get their supplies, especially processed tomato products from aggregators. These end-buyers demand high standards and consistent supplies. Therefore, the capacities of tomato producers and local processors need to be built so that they could produce to meet the sanitary and phytosanitary standards as a primary requirement in this market segment. Here too farmers need to be helped to establish relationships with buyers in this market so that they will produce to meet their requirements. However, unlike the value chains for soybean, maize, cassava and rice, there are no programmes to develop the chains.

Missing services in the tomato (indeed vegetables) value chain are pre-cooling and cold storage facilities and services. There is no temperature controlled or fit-for purpose transport vehicles for agricultural produce in general. Besides, large-scale processing facilities that could help reduce post-harvest losses by mopping up farmer produce, are not in operation. There is need to upgrade the wooden boxes, which are large and heavy, to lighter and smaller plastic boxes. Traders are unwilling to do this upgrading despite being involved in assessments of the plastic boxes. Ghana operates the unified extension system therefore there are no extension agents specialized in vegetable production (and for that matter, other crops or livestock).

Though farmers generally have limited access to funds from formal financial institutions, vegetable farmers who invest in greenhouses and drip irrigation equipment can enjoy up to 50 percent of the value of the investment as matching grant under the Export Development and Agricultural Investment Fund.

3.2.2.10 Livestock Marketing

Livestock traded in Ghana include animals of all species and breeds cattle, sheep, goats, pigs and poultry. Most of the cattle traded in the country originate from northern West African countries such as Burkina Faso, Mali and Niger. The imported ruminants ranged from 8,891 to 21,131 cattle, 6,594 to 16,738 sheep and 4,498 to 16,953 goats from 2007 to 2013. A total of 16,953 ruminant livestock was imported in 2013 (VSD, 2014, in MoFA, 2016). Traders also obtain supplies locally from livestock owners and primary collection markets; these traders either retail the animals in the village/town market, or sell to other traders who buy and transport them to the urban or coastal markets. The large amount of capital required for such transaction and transportation of the animals constitutes a relatively big capital outlay which restricts competition in the livestock import trade (Oppong-Anane, 2012).

There are also poultry traders who go to farms and buy spent layers and eggs in bulk for to sell to retailers. However, these traders are not well organised. The marketing of birds by traders is done in the open market. Pig traders have well established market channels and outlets with end consumers (MoFA, 2016). They usually buy from farmers by the herd and prices are determined by bargaining on the size of the herd.

The marketing of meat involves wholesalers who are either butchers, importers (who are also cold store operators). Operators of cold stores deal in dressed and cut up portions of beef, mutton, goat meat, pork and chicken. Retailers of meat involve butchers and farmer distribution

outlets mainly for dressed and portioned birds. Other retailers sell live birds in open markets, on table tops and in small cold stores (Oppong-Anane, 2012). Supermarkets distribute imported meat as well as milk and dairy products. Other smaller players in the meat market are smallholder retailers in market places, fuel stations and mobile vendors (MoFA, 2016).

Regulators in the livestock sector are: The Veterinary Services (for imports and exports, and internal movement of livestock); Food and Drug Authority for meat inspection with the VSD. The MMDAs are responsible for providing abattoirs.

3.2.2.11 Marketing of Fish from Aquaculture[10]

Ghana obtains fresh fish supplies from fish farming, marine and inland water fishing activities. The marine and the inland fish resources are the main sub-sectors. The Volta Lake is the major source of fresh water capture fish in the country. Fresh water aquaculture, part of the inland fisheries activities is a rather small component of the fisheries subsector. The average contribution of the three sub-sectors for 2013 and 2014 are about 71 percent, 20 percent, and 9 percent for marine capture, inland capture and farmed fish. Therefore, aquaculture sector needs to grow given increasing demand for fish, declining fish resources both marine and inland, and environmental concerns. The rest of the value chain description of the fish value chain is focused on aquaculture. The marine sector is discussed in relation to laws and regulation.

In aquaculture, fish is produced in earthen fish ponds, pens and cages. The farmed fish value chain includes large and small scale farmers. The large-scale fish cage farmers who are almost organized vertically. They produce seed, cultivate the fish, freeze the fish, and market themselves. The smaller scale farmers display a mix of vertical and horizontal management forms, involving sourcing of seed/fingerlings, feed. The farmers may sell their fish through outlets in town themselves, or through fish mammies at the farm gate.

The regulators in this market are the Ministry of fisheries and Aquaculture Development, the |Fisheries Commission (regarding imports and exports, Illegal, Unreported and Unregulated fishing (IUU).

3.2.2.12 Agricultural Input[11] Markets

The agro-input chain involves importers, wholesaler (dealers), retailers and farmers. Table 3.2 shows the numbers of registered importers and dealers in 2017. Table 2 gives an indication of the size of the relative sizes of suppliers in the market.

Table 3.2: Distribution of Agro-input Dealers

Input	Number of Importers	Number of Registered Dealers
Fertiliser	6	1500
Agro-chemicals (other than fertiliser)	6	4850
Seed	8	4225
Machinery and equipment	Not available	Not available

Source: Ghana Agriculture Input Dealers (Personal communication, 2017)

[10] This section draws from Awity, 2015

[11] Information was not available from GAIDA for machinery and importers and equipment dealers

The regional distribution shows higher concentration in Ashanti, Brong Ahafo, Western and Eastern regions. This is probably due to the concentration of cocoa in these areas. For access proximity to dealers is important. So, we use the numbers of dealers in 2017 and the 2009 distribution to estimate the density of dealers in each region, based on land area of the region (Table 3.3). The Brong Ahafo, Northern, Upper West and Volta have less than fifty dealers per square kilometer while Ashanti and Greater Accra have more than 100. The sector has however expanded tremendously in all regions, with density doubling in all the regions.

Table 3.3: Regional Distribution of Agro-input[12] Dealers

Region	Agro-input dealers (2009) (GSSP – IFPRI 2009)	Regional distribution (Percent) Dealers/region	Agro-input dealers (2017)	Density of Agro-input dealers (2009) Dealers/Km2	Density[13] of Agro-input dealers (2017) Dealers/Km^2	Percent Change in density (2009 - 2017)
Ashanti	851	24.85	2628	35	110	215
Brong-Ahafo	503	14.69	1553	13	39	207
Central	176	5.14	543	18	54	202
Eastern	400	11.68	1235	21	65	214
Greater Accra	98	2.86	302	30	101	234
Northern	359	10.48	1108	5	16	214
Upper East	219	6.38	676	25	75	203
Upper West	97	2.83	299	5	17	224
Volta	195	5.69	602	9	29	206
Western	527	15.39	1627	22	68	209
Total	3,425		10,575			

Source: GSSP-IFPRI (2009); GAIDA (2017); MoFA (2012)

Dealers and retailers may stock seeds, pesticides, knapsack sprayer, farming tools and fertiliser. Therefore, appropriate storage environment is required especially for seed, fertiliser and pesticides. But this is not the case especially at the retail level, where agro-chemicals are distributed alongside general merchandise with no cooling in the shops.

Dealers usually provide over the counter advice to farmers but may also provide on-farm demonstrations where necessary. There may be trade credit between actors but this depends on individuals and trust relations.

The Ghana Agricultural Input Dealers Association (GAIDA), are members who are registered for the trade. However, there are many unregistered dealers in agro-chemicals. The main benefits of GAIDA to its members are, increased bargaining power with suppliers and customers; ability to get loans from financial institutions with favorable conditions; free flow of information, especially on prices among dealers, capacity building through training on proper chemical handling and usage so as to be able to provide advisory services to farmers and pest control service providers.

[12] Includes fertilisers, other agrochemicals and seed

[13] Density is based on land area of each region reported in MoFA's Agriculture Facts and Figures

Challenges confronting GAIDA mostly relate to trading practices of input dealers, inadequate enforcement of regulations, large numbers of unregistered members, and low human resource capacity of members as most players are illiterate. Input suppliers adulterate produce or import fake products and products with inadequate labelling (only in French or Arabic). Importation of unregistered products is also rampant. The requirements of regulators are too heavy because multiplicity of registrations are required; e.g. separate registration of the dealer and products. This could be the reason for dealers' being unwilling to register.

Regulators of the agro-input market are EPA (pesticide registration, imports) and PPRSD (training on pesticide use and seed). Inadequate logistics impedes proper enforcement of laws. Yet, GAIDA is not permitted to regulate its members.

3.2.3 Performance of Agricultural Markets

Theoretically, the indicators used to assess market performance are price variability, and market integration reflected in the speed of price transmission. Here we also include interceptions in exports of fruits and vegetables as an indicator of performance of external agricultural markets.

3.2.3.1 Price Variability

Prices of raw agricultural produce are characterd by strong seasonal variation and occasional price spikes at the end of the season which can be attributed to inadequate storage facilities and traders running out of stocks (Kornher and Asante, 2016). While price variability is a reflection of the seasonal nature of production, its magnitude also indicates the extent to which the market is able to deliver time value by distributing supplies through storage and processing/preservation. Traders hold the largest share of stocks (Speculative and safety) therefore trader stocking behavior can affect the market dynamics. Traders avoid carrying stocks into the next season because of high risk of making losses. High seasonal price increases often reflect high real transaction costs that are related to physical infrastructure, and price dispersion across space and time. However, seasonal prices increases are also necessary to make storage profitable, given the high costs of storage and transportation.

Although there are no benchmarks for acceptable levels of variability, available data on price variability of agricultural produce in Ghana have magnitudes of 60 percent to more than 100 percent between minimum and maximum prices. Kwadzo and Srofenyo report that maize prices can vary by up to 67 percent around minimum seasonal prices or 45 percent around mean prices (Kornher and Asante, 2016). Maize prices vary the most in Table 3.4.

Table 3.4: Percent Difference about Mean Maize Price

Commodity	Maximum difference	Minimum difference
Maize	20	-25
Millet	5	-6
Sorghum	5	-5

Source: Derived from Kornher and Asante, 2016

Prices recorded at Bolgatanga market show differences in the degree of variability of produce (Table 3.5). Millet, sorghum and beans vary much less than groundnut, beans, yam and onion; the latter two are very perishable produce. The high variability in groundnut prices is that the off-season produce is much dryer and preferred to the wetter produce at harvest. Rice prices

tend not to vary during the season and rather have inter-year changes, driven by import prices and exchange rate movements.

Table 3.5: Produce prices in Bolgatanga Market

Item (Bowls)	Modal Retail Prices (GHC)			Modal Wholesale Prices (GHC)		
	Main season (Aug – Oct)	Off season (Apr – Jul)	percent difference	Main season (Aug – Oct)	Off season (Apr – Jul)	Percent difference
Groundnut	7	11	57	6.5	10	54
Millet	4	5	25	3.5	4.5	29
Maize	3	4	33	2	3.5	75
Sorghum	3.5	4	14	3	3.5	17
Beans	4	5	25	3	4.5	50
Yam (3 Tubers)	5	12	140			
Onion (Rubber Container)	10	25	150	9	22	144
High Quality Local Rice (bowl)	10	10	0	9	9	0
Low Quality Local Rice (bowl)	8	8	0	7.5	7.5	0
High Quality Imported Rice (bowl)	12	12	0	11	11	0
Low Quality Imported Rice (bowl)	10	10	0	9.5	9.5	0

Source: Bolgatanga market, June 2016

There are also inter-annual price variations caused by supply or demand shocks. This is illustrated by with maize prices. Between 2006/07 and 2011/2012 crop years, prices declined between 15 percent and 34 percent (Amanor, 2012). The author concludes that there is a need for storage systems (at the farmer level) to stabilize seasonal prices. However, farmers sell maize soon after harvest because they need cash; therefore, some financing is needed to complement storage. This is the basis for inventory credit and the more advanced warehouse receipt scheme being piloted by the Ghana Grains Council (see section 3.3.3).

3.2.3.2 Spatial Integration of Markets

Spatial integration of producing (rural) and consuming (urban) agricultural markets is used to ascertain the efficiency of the marketing system. This section is based on research publications on market integration in Ghana.

Most studies on market integration on agricultural produce markets in Ghana report swift price transmissions from a central market (production or assembly) to a local market (Abdulai, 2010). However, high transportation costs (due to poor infrastructure), behavior of traders (commodity price speculators) in stock releases, collusive behavior of traders (e.g. market queens and price setting), and market entry barriers imposed by trader association impede full market

integration (Abdulai, 2000 & 2010; Quaye and Ameleke, 2008; Cudjoe et al. 2010, Amikuzuno, 2001; Langyintuo, 2010). Amikuzuno and Ihle (2010) assess market integration in Ghanaian tomato markets in Navrongo, Techiman, Kumasi, Tamale and Accra, using a price transmission framework. The researchers find price transmission to be fast, suggesting that integration between the five markets is strong. According to the research findings, disequilibria mainly trigger price responses in the two production regions of Navrongo and Techiman and spillover to the other markets.

An earlier study of yam market by Amikuzuno (2001) found the price transmission between Tamale (producer market) and Accra (consumer market) was slow but that the markets were integrated in the long-run. Amikuzuno also found that transport charges negatively influenced integration between Accra-Bimbilla and Tamale-Zabzugu markets.

Ankamah-Yeboah (2012) used regional monthly wholesale price data from 2002 – 2010 and applied the threshold autoregressive model to assess integration of maize markets. He found bi-directional market interdependence between market pairs both in the short and long run, consistent with findings of other studies. Ankamah-Yeboah also reports that recent expansion in communication infrastructure has enhanced the regional market integration. This is consistent with Egyir et al. (2013), who found in their study of the efficiency of maize, groundnut and yam markets, that price transmission between markets in the Eastern Corridor and Accra was 6 percent faster in the five-year period after farmers were introduced to ICT market information service in 2006 than the period before.

However, the literature also points to asymmetry in price transmission due to activities of traders. Traders in Accra are slow in passing on price increases in the central market for fear of loss of goodwill and/or loss of customer share given the multiple sources of supply of buyers; stocks are adjusted to either boost or dampen prices; that is, traders respond quickly when market margins are squeezed (prices falling) than when stretched (prices rising) for all market pairs except between Brong Ahafo and Greater Accra market pairings (Ankamah, 2012). The behavior of tomato traders in Box 1 (section 3.2.2.8) illustrates this.

Performance of agricultural markets is good but can be improved. Seasonal price variability is high especially for perishable commodities, and is amplified by poor infrastructure such as roads in production areas get even worse during the rainy season. Price of rice, millet and sorghum have low variability as storage of these for speculation purposes is low. The marketed surpluses of millet and sorghum is low while rice is dominated by imports and trader motivation for stockpiling rice is for meeting demand increases rather than price increases as is the case for maize. Agricultural commodity markets are integrated with prices between market pairs responding to shocks. However, price transmission is slow or asymmetric because of trader strategy to protect their market share by not fully transmitting price shocks that increase their margins. Trader practices such as control of product flow, control of entry into markets, and price collusion keep the markets from being competitive.

3.2.3.3 Quality of Exports

Despite of the high level of pesticides, the quality of exports of fresh vegetables to the EU have fallen short of desired standard. There has been high incidence of interception of vegetable exports to the EU due to the presence of pests (trips, white fly and fruit fly among others) on vegetables exported to the EU. Notifications to Ghanaian authorities from EU about pests in vegetables exported to the EU increased from 40/year in 2008 to 236 by July 2014. By August 2014, the Ministry of Food and Agriculture had to temporarily ban vegetable exports. Maden and Koomen cite studies which have reported high residual levels of pesticides in vegetables.

3.3 Value Chain Upgrading

Stakeholders in the agriculture sector have recognized the need to upgrade the country's agriculture value chains from the informal to formal sector. Efforts are geared towards strengthening all actors, particularly the smallholder farmers, aggregators, inputs and service suppliers to perform their roles to deliver quality produce for growing sophisticated end-users (middle income consumers, domestic industrial food and beverage processors, and exporters). The drivers of these institutional innovations for a modernized marketing system are:

- Growth in agro-processing firms who need large quantities of quality produce delivered on time
- Increasing demand for quality to access export markets which requires closer relationship between the buyer and the farmer.
- Piloting of value chain enhancement projects by MoFA and development partners (ADVANCE, NRGP, MOAP, OVCF, and MADE).

Partnerships between farmers, aggregators, processors and off-takers (processors or exporters) are being created to promote the pursuit the common goal of developing the value chains for the realisation of individual interest in profitability, growth and sustainability. These arrangements have evolved from private sector (e.g. maize and soybean milling, cassava processing into starch and flour). The MoFA and MoFAD have also initiated outgrower schemes as pilots toward developing value chains particularly livestock and fish. As shown below, partnerships are governed by formal contracts and standards (quality and measures). This section presents some of the partnerships successful and emerging partnerships.

3.3.1 Soybean Value Chain Upgrading

Soybean production is driven by Ghanaian poultry industry. The size of Ghanaian commercial poultry production is pivotal to accurately assessing the volumes of imported soybean meal (and feed concentrates). Domestic soybean processing is meeting roughly 45,000 MT of the soybean meal demanded with the balance imported as soybean meal or feed concentrate (containing partial protein requirements). Soybean meal is a high-quality protein, which makes up between 20 percent and 28 percent of a poultry ration. It gives better quality eggs and meat. In Ghana, most of the poultry farmers use fishmeal as a percentage of required protein in a poultry ration. This leads to a fishy odor and flavor in eggs and the poultry carcass.

The soybean value chains are the soybean meal and products such as dawadawa, soy meat and soy milk. These three products are produced on small scale and can be classified as household or artisanal processing. They consist of farm households, local aggregators, regional aggregators, household or micro-processors and medium to large scale processing enterprises (of soybean meal/cake, flour blends, and oil). Enablers in the chain include input dealers, financial institutions, research institutions, and providers of warehouse and extension services. Various NGOs operating in most parts of the savannah belt also facilitate the soya value chain.

Figure 3.6 illustrates the generic/informal soybean value chain. The main components are production, marketing, processing, utilisation of processed products, provision of inputs (seed, inoculum, fertiliser) and services (tractors, financial, extension). Farmer groups, NGOs, development projects facilitate the activities especially at the farm level. The relationship between the actors, especially up the chain, is very informal and actors are independent of each other. This implies that standards of quality and measures are not applied. This applies up to the local or district aggregator level. Actors beyond this point apply standards as the off-taker (processing firms) demand quality and only deal in standard measures.

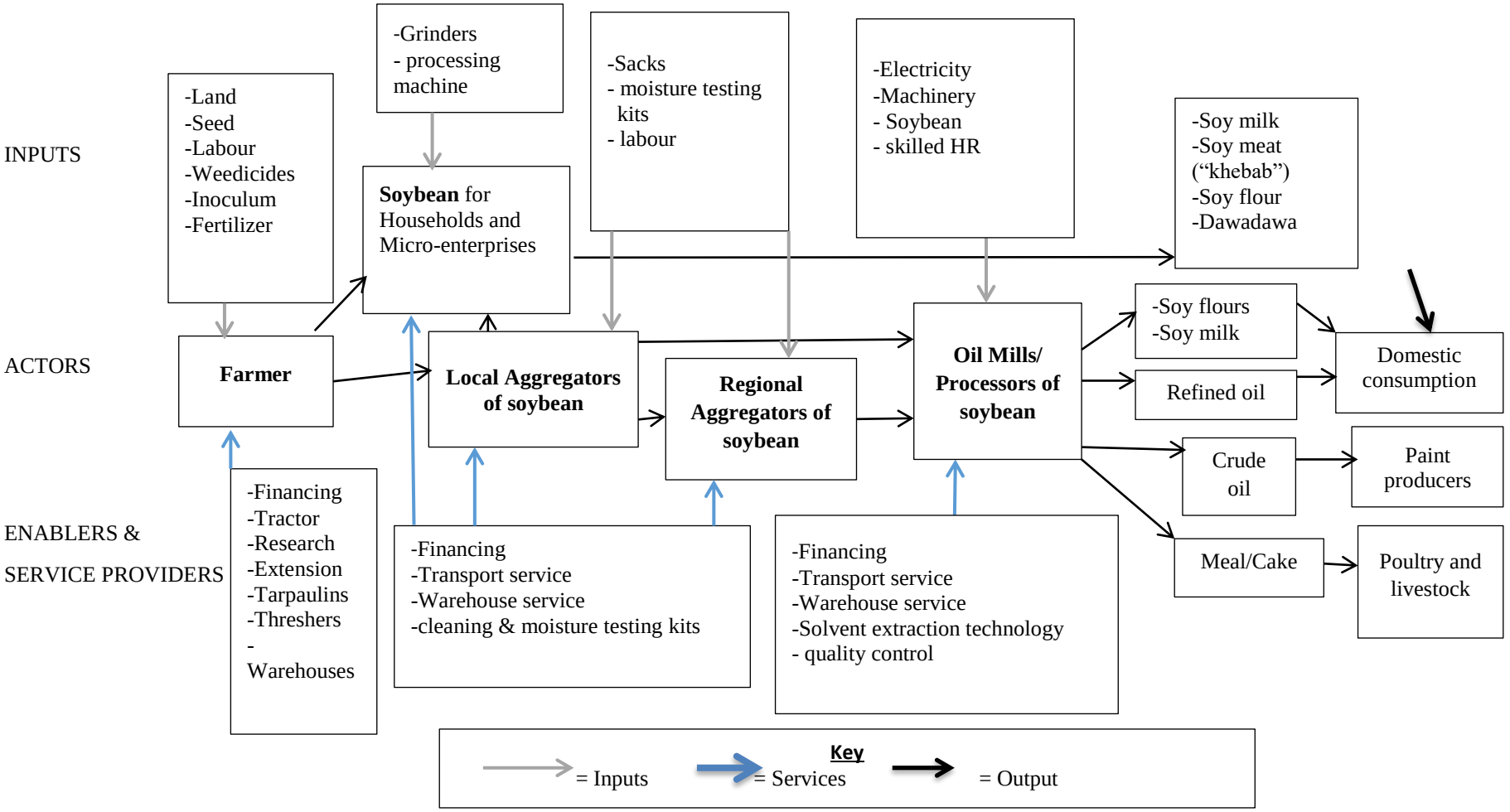
Producing household retain less than 10 percent of annual soybean production so the soybean meal channel is the dominant. It is depending on domestic poultry industry. Crude soy-oil and refined oil are by-products from processing meal.

The soybean value chain is a focus of attention by NRGP and ADVANCE. NRGP promotes value chain committees and outgrower schemes linked to aggregators and off-takers (large scale processors) in BA and Ashanti.

Figure 3.7 illustrates the partnerships being developed among the soybean value chain actors to strengthen the chain. The network involves more than producers, traders and processors, and illustrates the types of services and facilitation that a value chain needs to build a self-sustaining trading system. In the network, several small farmers are linked to processing companies (the market) through Kharma Farms (nuclear farmer who purchases and aggregates the output of smaller farmers). The smaller farmers receive inputs (seed, agro-chemicals and mechanisation services) from the service providers through the nucleus farmer. The arrangement ensures that farmers produce the desired quantity and quality. Business development services and credit are brokered for the input and service providers and the nuclear farmer. This network is expected to be more efficient than the traditional trader gathering system because it reduces transactions costs, while improving access to inputs and buyers of the produce; buyers benefit from the higher certainty of supplies and quality of produce.

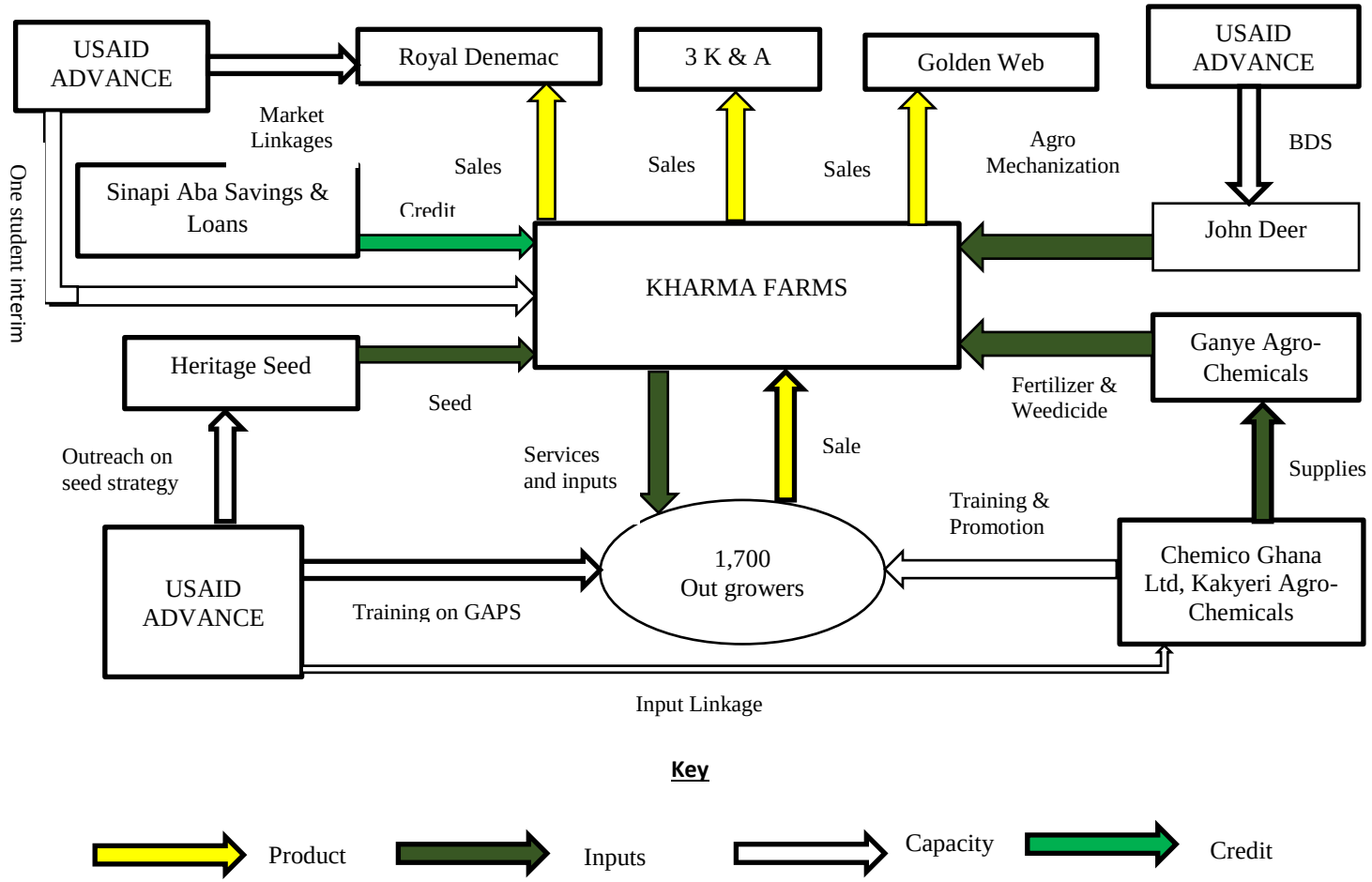
The sustainability of such a network depends on whether parties are satisfied with the net benefits. Scalability of the arrangements also depends on the availability of facilitators such as the ADVANCE project or the Northern Rural Growth Programme (which has engaged the IFDC to provide technical assistance and facilitate the field activities). Facilitation of these networks involves investment of public funds which is a policy issue.

Figure 3.6: The Soybean Value Chain (informal)



Source: Al-Hassan (2015). Soybean Value Chain Cluster Development. MoFA/FAO

Figure 3.7: Feed the Future Initiative – Kharma Farms[14]



[14] Adapted from ADVANCE, Tamale (2014)

In innovative market arrangements in the maize sub-sector, aggregators operate on a much larger scale; they buy from collectors, large scale farmers, nucleus farmers and FBOs and supply to a variety of buyers (urban wholesalers and retailers; public sector organisations, the Word Food Programme; poultry farms that produce their own feed, as well as industrial food processors). In this system, there are some level of contractual relationships between parties. Similar types of this model are in operation or have been piloted for rice, sorghum, oil palm, mango and pineapple.

3.3.2 Rice Value Chain Upgrading[15]

Rice output in 2014 was 604,000 metric tons having increased from about 470,000 metric tons in 2011. The average annual output between 2009 and 2014 was estimated at 48 percent of annual requirement (MOFA, 2014); this has since increased to 56 percent. The growth in output is due to increase in area planted as well as improvements in yield. Ghana is therefore a large importer of rice.

The rice value chain actors are farmers, aggregators, processors, traders and consumers or end users. The marketing channels for paddy and locally milled rice are similar to traditional marketing system described for soybean, tomatoes and maize in this report. Imported rice has a shorter chain with the actors being importers, wholesaler and retailers with transportation services.

As with the traditional chain, rice is distributed throughout the country through independent marketing and distribution networks; that is there are no formal linkages between the actors. Ayambila has identified different innovative business models of value chains. The models aim to address the challenges limiting the growth of the value chain, including access to inputs, mechanized services, extension, finance and market by smallholders; access to adequate supply of quality paddy for processor; reduced side-selling by farmers; supply of high grade milled rice to high-end markets.

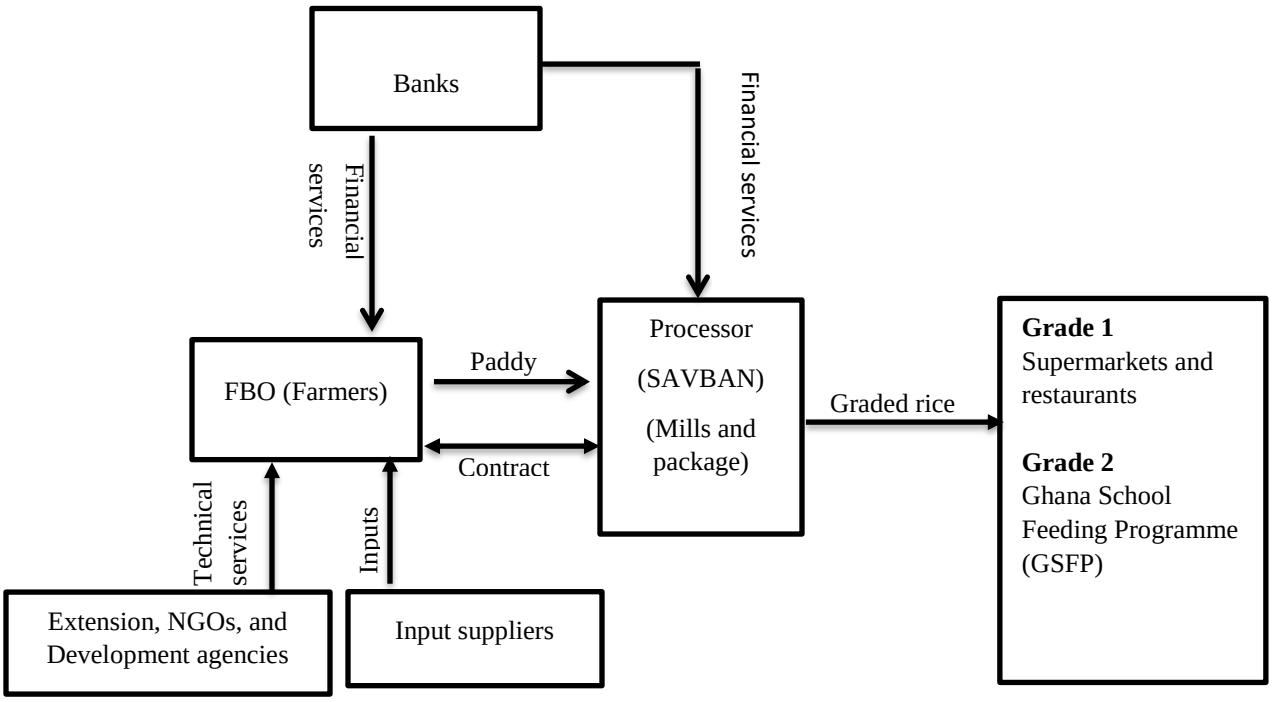
The first model is led by a processor who is a private investor that leads in organsing and establishing nuclear and outgrower schemes. The processor invests in a plant that cleans, mills, grades and packages the rice. The investor links rice farmers to identified banks, inputs suppliers and service providers. It also facilitates access of farmers to certified seed of the preferred variety and mechanized services for farmers. The processor also uses the public extension officers to provide technical support to the farmers. All these services are backed with a formal contract with farmers who are required to supply the output of paddy rice to the company. The company also has contract with identified super markets restaurants to supply first grade rice; it also has contract with Ghana School Feeding Programme to supply second grade rice to schools (Figure 3.8).

The chain is governed through value chain committees comprising of leaders/representatives of all the actors in the value chain. Together the farmers and processor agree on competitive prices to avoid side-selling, which reduces the risk of underutilized processing plant capacity.

[15] Drawn from Ayambila (2015). Rice Value Chain Profiling. MoFA/FAO Unpublished report

All financial transactions are conducted through the banks and farmers are provided inputs in-kind while funds are disbursed through the accounts of beneficiaries. This is to reduce loan default rates, however it does not prevent farmers from side-selling.

Figure 3.8: Rice Value Chain Partnership between SAVBAN Company-Global Agri-Development Company (GADCO)-Copa Connect



Source: Ayambila (2015)

The second partnership model is led by Savanna Farmers Marketing Company (SFMC), a large produce aggregator in northern Ghana. SFMC buys and sells grains including maize and sells to off takers and processors. In doing so, the company: i) facilitates marketing of agricultural produce as an aggregator; ii) buys and sells to bigger markets and operators downstream of the value chain; iii) purchases grain (maize, rice and soybean) from the 3 northern regions; and iv) works with FBOs to guarantee supply. SFMC signs agreements with farmers; it does not pre-finance FBOs but facilitates access to loans by FBOs and therefore channels all transactions through those banks. Recovery rates for partner banks is high.

Nevertheless, SFMC still experiences breaches of contract by farmers. The company also has challenges with respect to transportation and working capital.

3.3.3 Maize Marketing and Value Chain Upgrading

The main economic agents in the maize output market in Ghana are collectors, aggregators, processors, exporters as well as poultry farmers. Collectors buy maize directly from farmers at community level or at the local market place and usually retail to domestic consumers, food processor or itinerant traders/aggregators. Aggregators operate on a much larger scale as they buy from collectors, large scale farmers, nucleus farmers and Farmer Based Organisations and supply

to urban wholesalers and retailers; institutions such as the prisons, educational institutions and the school feeding programme, poultry farms as well as industrial food and feed processors. Aggregators vary in size from market queens to companies. There is usually no binding relationships between the small community level collectors/traders and aggregators. On the other hand, the large scale, high quality maize off takers and processors have networks of aggregators, as well large scale and nucleus farmers that supply maize to the firms. For example, Yedent is supplied by the Savannah Marketing Company in Tamale as well as aggregators from in the Brong Ahafo region; similarly, Premium Foods buys maize from aggregators in Brong Ahafo, Ashanti and Upper West regions. Other off-takers with network of suppliers are Nestle and WFP[16]. Below are some of the partnerships in maize value chain.

The input supplier model is led by Wienco/Yara and linked to Masara N' Arziki, an association of maize farmers. Masara i) facilitates mobilization of farmers into associations; ii) provides extension and training for members of its associations; iii) provides input suppliers' credit to farmers. Farmers repay for inputs with maize. Transactions are based on written contract with farmers, enforceable in the law courts. Masara in turn buys the rest of the maize from farmers and supplies these to poultry farmers, industrial food processors, World Food Program and traders in the open market. Challenges facing Masara are, low maize yield (a third of potential of 60 – 80 50kg/ha) despite the high quality input and close monitoring; and diversion of inputs or produce, or both. There is therefore opportunistic behavior among farmers as experienced by aggregators on the soybean value chain. Programme managers are addressing these challenges from three angles. There is shift from group-based support to support to individual farmers; farmers with potential are being identified to grow them to commercial farmers; farmers are being introduced to conservation agriculture to reduce input use and focus on soil and land management as a way of reducing expenditure on agrochemicals.

The processor-led model involves Premium Foods, which processes grains, especially maize into grits, fortified maize meal and supplies to a variety of markets, including the breweries, the School Feeding Program, Ministry of Health, the World Food Program, and Nestle. In doing so, Premium Foods buys maize from a mix of aggregators as described above. The company also runs an outgrower model that revolves around risk sharing as a motivation for smallholders to deliver supplies to the company. The farmers are allowed to choose their most crucial input or service need to be provided by the nucleus farmer. Premium Foods serves as an input provider and supplies fertiliser to the nucleus farmer for his outgrowers (about 600). The selected nucleus farmer also provides ploughing services. Outgrowers provide all the other services and pay for the with maize. Outgrowers produced about 68 percent of 1900 bags produced in 2014 under this model.. Pricing is by 100kg and the sacs are provided by Premium Foods. The produce is collected during the harvesting season therefore Premium Foods has to have adequate warehousing both for the maize and the final products. Premium Foods now has a purchasing power of at least 20,000mt per annum and US$3 million in capital investments[17]. Another model is the Guinness Ghana Brewery – Premium (maize processor) – Scan Farms.

Guinness Ghana Brewery Ltd (GGBL) uses maize grits to produce alcoholic and non-alcoholic beverages. The minimum maize consumption of GGBL per annum is 6000metric tons,

[16] Afenyadu (2015). Maize Commodity Value Chain Profiling MoFA unplublished.
[17] Afenyadu (2015). Maize Commodity Value Chain Profiling MoFA, unplublished

which would be semi-processed into 3000 metric tons of grits. GGBL has a 3-way relationship with Scan which supplies maize to Premium Foods to process maize grits for GGBL. GGBL facilitates and coordinates both the delivery of the raw maize to Premium Foods as well as the grits from the latter at pre-determined agreed prices. The brewery also provides technical services to Scan Farms to assure quality. With GGBL as a guaranteed off-taker, Scan farms, is able to secure offshore loans at minimal interest and short term loans locally to offset some recurrent expenditure[18].

Box 2 describes the role of World Food Program in building the value chains of maize, rice and cowpea

Box 2: WFP's Support for Grains Value Chain Upgrading

The World Food Programme (WFP) purchases locally produced food staples from farmers in the Ashanti and Northern Regions. The organization's Purchase for progress programme (P4P) aims to increase smallholder farmers' income, reduce poverty, hunger and malnutrition. WFP supports only producer groups and has trained these farmer groups on P4P forward Contracts and the important components of the post-harvest management in the value chains for rice and beans. Farmers are also trained in technical, business and organizational development, and how to get access to profitable markets. An important component of the WFP intervention is making farmers aware of warehouse practices, grading and storage that would enable them to deliver their produce to the Ghana Grain Council certified warehouses and how to use deposits as collateral for loans from banks under the Warehouse Receipt System. WFP has also provided farmers with rice reapers, rice threshers and tarpaulins to enhance the quality of paddy.

Through their participation in WFP procurement processes, farmer organisations have built skills to access more remunerative markets. 3,000 metric tons of food were purchased by WFP Ghana during 2010-2014.

The lesson from this support is that upgrading farmers in value chains should be comprehensive and involve all farmer activities in the value chain- farming, harvesting, storage, business development and accessing funds on commercial terms.

3.3.4 Cassava Marketing and Value Chains Upgrading[19]

Cassava production represents approximately 50percent of all roots and tubers output in the country. National production in 2012 and 2014 were 12.9 and 13.1 million metric tons of fresh roots. Most cassava is grown by small-scale farmers with small landholdings. At that scale of production, harvesting, and post-harvest handling are carried out with limited chemical and technical inputs. Cassava is grown in all regions of Ghana except the Upper East and Upper West regions; According to the statistics of MOFA production of cassava roots has increased by almost 40 percent from 2007 to 2011. In large part this is due to an increase in average yield per hectare of 26 percent over that period from 12.76 to 16.17 tons per hectare.

The main planting season for cassava is during the rainy season from May to September. Cassava is harvested between March and October and the largest percentage of the cassava root harvest comes onto the market in the early part of the wet season (May to July). Approximately 50 percent of cassava is either consumed or sold as fresh roots for production of Ghanaian staples at household level. About 1percent is used for industrial purposes. About 30 percent of mature cassava is unharvested (Onumah et al., 2008) due to insufficient demand, or likely weak marketing connections.

[18] Afenyadu (2015). Maize Commodity Value Chain Profiling MoFA, unplublished

[19] Source of information in this section is Asuming-Brempong et al. (2016). Linking smallholder farmers to profitable markets: A case study of selected cassava value chains. Michigan State University and Syngenta Foundation

Industrial use of cassava is key to enhancing the value chain. The possible industrial cassava based raw materials are high quality cassava flour (HQCF), high quality starch (HQCS), ethanol. These are inputs for breweries, plywood and textile industries, and the confectionary biscuit industry. Innovative partnerships are being developed in the private sector to upgrade the cassava value chain for industrial uses. The partnerships include:

i. Guinness Ghana Brewery Limited (GGBL) – Ayensu Starch Company Limited (ASCo) – Aggregator (MAXPO Transport Services) – Smallholder farmers
ii. Accra Brewery Limited – DADTCO-Ghana Limited –Smallholder farmers
iii. Accra Brewery Limited – Caltech Limited – Smallholder farmers.

Through these partnerships, cassava product purchases by ABL and GGBL in 2013 and 2014 are presented in Table 3.6. ABL also purchased about 3000 metric tons of maize grits, valued at GHS4.3 mill in 2014.

Table 3.6: Purchases of Cassava raw material by breweries

Company	Quantity (Metric tons)		Value (GHS)
	2013	2014	2014
GGBL	3527	7368	1105248
ABL	1214	795	488431

Source: MoFA 2015. Annual Progress Report, 2014

The partnership led by GGBL is illustrated in Figure 3.9. Guinness Ghana Brewery Limited (GGBL) uses cassava starch to produce its Ruut Beer brand. Less than 10 percent of its business and income is dependent on High Quality Cassava Starch (HQCS); even so this translates to a large ready market for fresh cassava roots. GGBL sources it starch from Ayenso Starch Company Limited (ASCo), which has an ultra-modern HQCS processing plant. ASCo also has a 200 ha cassava nucleus farm to supply cassava roots to the factory.

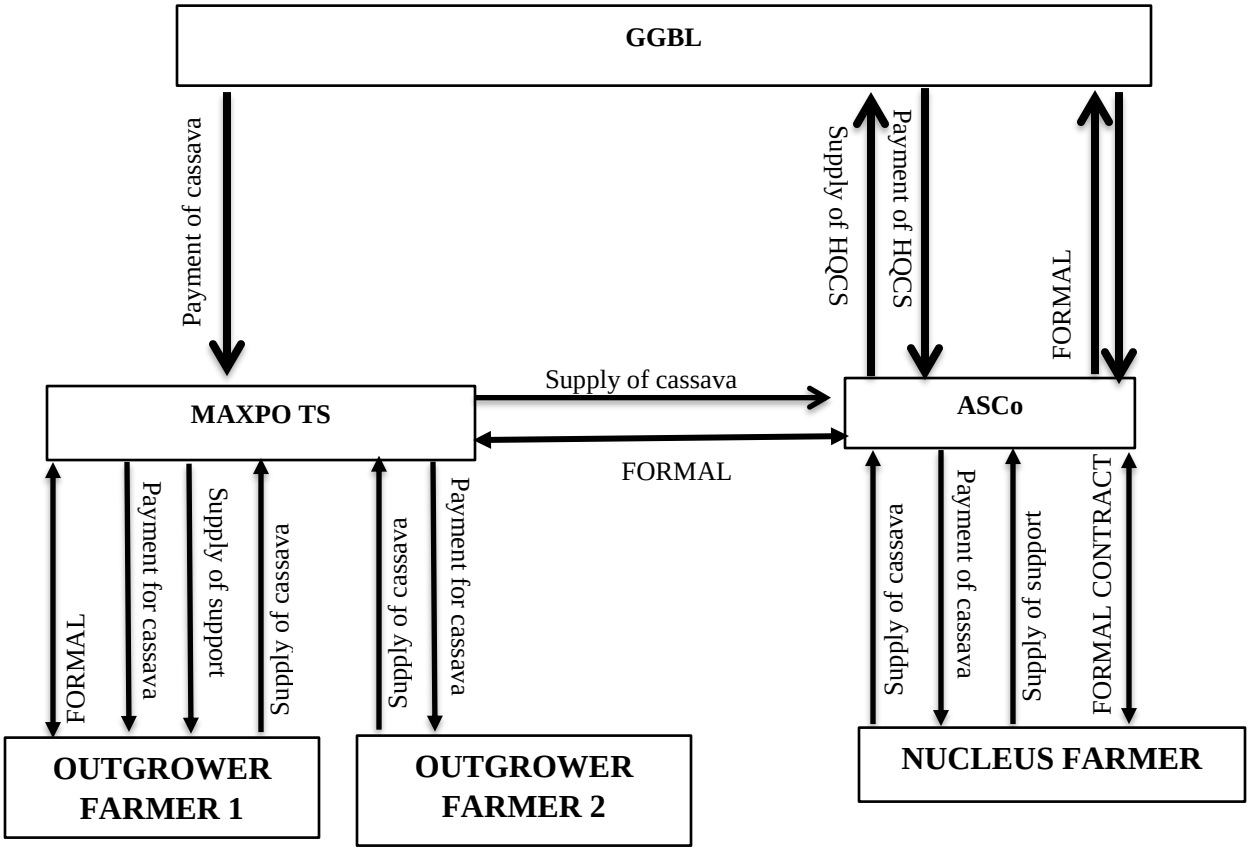
ASCo receives funding support (about USD1 million) from GGBL for its operations, and sells 99 percent of its production to GGBL. GGBL has also brokered a partnership between ASCo and a transport service provider (MAXPO TS) for aggregation and haulage of fresh root from farms to the processing plant, allowing ASCo to concentrate on its business of processing HQCS. While there is no contract between MAXPO TS and GGBL, the partnership between the latter and ASCo is governed by a formal contract. The aggregation and transport services by MAXPO TS extends across the country.

The partnership between farmers and the aggregator depends on the availability of roots and is therefore seasonal, but the transporter has informal agreements with sub-aggregators who help to assemble roots. GGBL is the innovator in this partnership largely because of its interest in assured quality and quantity of cassava starch. The partnership enables smallholders to access an industrial processor that supplies a high end market such as GGBL. The partnership demonstrates that smallholder farmers can have contractual relationships and deliver the needed quality if the market is assured, payments for their produce is timely, prices are set with consultation and logistics for moving the produce, especially a bulky produce like cassava, is available.

The GGBL-ASCO partnership has been in operation since 2014 and Asuming Brempong et al. (2016) report that ASCO's HQCS output is less than required by GGBL and this is also

because ASCO's utilisation of its capacity is only 6metric tons/day out of the 88 metric ton/day total capacity. What is not clear is whether the reason of the low capacity utilisation – availability of cassava roots or operating capital for the plant. Whatever it is, this is a weak link in the chain so farmers and ASCO have to increase cassava production or ASCO has to ensure it has the needed operating capital.

Figure 3.9: Cassava Starch VC partnership between GGBL, ASCo, MAXPO TS and Farmers



Source: Asuming-Brempong et al. (2016)

3.3.5 Livestock Value Chain Upgrading by MoFA

MoFA launched a livestock out-grower scheme to support pig farmers across the country with good breeding stock. One hundred farmers were selected in from each of the ten regions to serve as nucleus farmer to operate an out-grower scheme. These serve as centres for the production of breeding stock for supply to other pig farmers. At the end of 2014, 18 farmers had received 72 parent stock and 112 pigs were re-distributed to 28 other farmers.

To improve hatchability and enhance guinea fowl production under WAAPP, 240 farmers in Northern, Upper East and Upper West Regions were trained and equipped with 40 incubators and 40 electric generators to serve as out-growers for the supply of keets to other farmers.

Ghana Broiler Revitalization Project (GHABROP) is a private sector led initiative. It has lead farmers who receive technical support from MoFA. Launched in July 2014 in the Ashanti and Brong-Ahafo regions, by end of the year, 300,000 broiler birds had been produced and processed at Darko Farms Limited and Yamoah Asamoah Processing Plant in Kumasi.

Unlike the private-sector led value chain programmes the MoFA programmes for upgrading livestock value chains have not defined a market for the farmers. The market for the final produce drives the value chains so the MoFA outgrower schemes should eventually be upgraded further by identifying an off-taker who will work with the pig and guinea fowl farmers to build a win-win partnership.

3.3.6 Fish Value Chain and Upgrading

Ghana gets her fish supply from capture fisheries (marine and internal) and fish farming, which accounts for less than 9 percent while marine fishing accounts for about 70 percent of total fish supply in 2014 (FC, 2015). Most of the fish from capture fisheries is smoked by the fish mammies for the domestic market therefore there is not much demand for cold storage from this source. The smoked fish can be stored for over a year in traditional baskets. In addition, all fish importers need to show evidence of cold storage capacity before they are granted import licenses to import fish[20].

Farmed fish, mostly Tilapia, is consumed fresh and its flow along the value chain is facilitated by chilling with ice blocks. The large commercial fish farmers have cold stores dedicated for storage of their own fish. Cold storage capacity is concentrated in the Accra-Tema area, with 85,789 and 92,968 metric tons in 2013 and 2014 respectively. In contrast, total storage capacity in four regions (Upper East, Upper West, Brong Ahafo and Northern) in 2015 was only about 4,120 metric tons[21]. What is generally lacking are blast freezers to quickly freeze the fish before they are packed into the cold stores.

Fish farms are generally located close to road networks or located in clusters along the Volta lake, therefore fish mammies who purchase the fish have easy access to the farms. The mammies do not use any specialized equipment in transporting the fish. Large baskets are lined with plastic sheets to carry the fish. Some commercial operators use polyethylene containers laced with ice to transport fish to marketing centres. Tropo Farms, which is a big commercial operator, has several refrigerated trucks to move fish from the cage farm to its marketing centre.

The Ministry of Fisheries and Aquaculture Development (MoFAD) has initiated the Nucleus-Out-grower and Input Support Scheme aimed at increasing fish output from fish farming. The target is to increase fish output from this sector from 38,547 metric tonnes in 2014 to 120,000 metric tonnes in 2017. Again this strategy does not have designated market for a high value produce such as fresh tilapia. Such market linkage will be needed to accommodate the anticipated 2 fold increase in aquaculture output in 3 years.

3.3.8 Integrating Smallholders into Upgraded Value Chains: Examples from Africa

[20] Awity (2015). Tilapia Agri-food Value Chain Cluster Analysis. Unpublished report, MoFA/FAO
[21] Awity (ibid)

The dominance of smallholder production and informality of agricultural marketing and the associated problems of problems of with poor coordination, non-use of standards and poor quality assurance associated with smallholders is generally rife in Africa. Efforts are being made to address these problems because of their restraint on farmers' access to markets. Some examples of successful interventions to integrate smallholders into value chains are discussed below. Together with the partnerships in Ghana discussed in section 3.3.1 – 3.3.7, lessons are drawn for policy. These African examples are from Nigeria and Uganda. This narrative is based on Studies by the FAO[22] and a research paper on empowering communities through market – led development[23].

3.3.8.1 AACE Foods Processing and Distribution Ltd in Nigeria

AACE Foods, a start-up agro-processing company in Nigeria, has been successful in working with smallholders to process fruits, vegetables, herbs produced by small farmers in Nigeria. The company started with a developmental goal of addressing high malnutrition among children and reducing post-harvest losses. It also identified an opportunity to produce for the domestic market as 90percent of processed foods was imported. AACE Foods based its business model on processing and packaging nutritious and tasty foods with quality fruits, herbs and vegetables produced by smallholder farmers in Northern Nigeria. The company partnered with community groups and non-profit associations. The target market for AACE are institutional buyers, such as food processing companies, caterers, hotels, and fast food chains. It is reported that AACE has gradually displaced imports and improved its share of the domestic spice market. The partnership has been a success because in four years (2009 to 2013), AACE had sourced produce from 5000 farmers, 60 percent of whom were women. AACE has had to overcome the following challenges in engaging smallholder farmers in the beginning (Table 3.7).

Table 3.7: Challenges of engaging with smallholders and solutions

Challenge	AACE's Solution
Unavailability of data on farmer groups/clusters and their products, so the company had to conduct their own research in order to find the farmer groups.	AACE accessed a grant from a donor funded business innovation facility and was able to engage Technoserve to conduct a supply chain study. Through this study, the organization was able to identify clusters of farmers that could support its raw material requirements.
Difficulty in reaching out to communicate with farmer groups	AACE Foods linked up with IFDC field staff that support the key farmer clusters, to relay information about orders, pricing and payment terms
Preference of farmers to deal in cash and to receive payments for produce on the spot which was inconsistent with AACE Foods policy of paying 50 percent up front and providing the balance about a week later, upon delivery of produce	Used IFDC as an intermediary and guarantor to both parties, the smallholder farmers accepted the company's payment arrangement
Low regard for produce quality standardization and use of standard measures	Over time, through periodic meetings to sensitize farmer groups on company's expectations on standards

[22] Ndidi Nuweli, Arona Diaw, Festus Kwadzokpo and Aziz Elbehri (2013). The role of the private sector and the engagement of smallholder farmers in food value chains: initiatives and successful cases from Nigeria, Senegal, and Ghana. In Rebuilding West Africa's food potential: Policies and market incentives for smallholder-inclusive food value chains, Edited by Aziz Elbehri. FAO/IFAD Rome; Pg 187 – 209

[23] J. Njuki, S. Kaaria, P. Sanginga, E. Kaganzi and T. Magombo (2008). Empowering Communities through Market led Development: Community Agro-enterprise Experiences from Uganda and Malawi

	Farmers were encouraged to purchase scales and link prices to standard weights (e.g. per kg). AACE trained the farmers on cleaning and sorting practices. Farmers receive premium prices for higher quality output.

Source: NUWELI et al. (2013)

3.3.8.2 Empowering communities through market – development: Application in Uganda

Cases on the application of the approach of empowering communities through market – development are reported by Njuki et al (2006) for Uganda and Malawi. It is an approach to community agro-enterprise development that focuses on building skills and knowledge of communities, local service providers, and farmer organizations to engage effectively in markets. Small farmers are enabled to successfully link themselves to potential markets, 'producing what they can sell rather than trying to sell what they have produced.' The systematic approach is illustrated in Figure 3.10. Unlike the value chain upgrading partnerships in Ghana (section 3.3.1 – 3.3.7), this discussion focuses on how to engage with smallholders and facilitate their access to markets.

Basically, it involves partnering with farmer groups or cooperatives and building their capacity through participatory actions (diagnosis and visioning, market research, and identification of potential markets through market visits and evaluation options for production; steps 1 - 5). Farmers then experiment to identify or develop suitable technologies (step 6). In step 7, farmers design and implement their agro-enterprise projects (organizing resources, production and their supply chains – step 7). They also facilitate support services for enterprise development by linking up with service providers (research, extension, finance, market information). Step 9 is a requirement for the local area to provide the enabling institutional environment for the growth and sustainability of the enterprises. The process involves the community (Local government, NGOs/Development agencies, private sector) as well as research and extension agencies. Therefore a network of partnerships is built to facilitate farmers' enterprise development through their own decisions and choices.

The Nyambyumba United Farmers, Kabale, Uganda was able to transform from a seed potato growers to producers of ware potato. In three years (2003 – 2005), farmers of the cooperative sold almost 300 metric tons of potatoes, valued at equivalent of 50,000 US Dollars) to their partner supermarket. Similarly, in Malawi, households in sites where the approach is being implemented have an average income of USD 2.5 compared to the national average of less than a dollar a day. The households produced piglets using the Heifer Model of 'passing on the offspring of livestock' and have diversified their income sources.

The lessons from value chain upgrading with small farmers include the following:

a. Relationship should be driven by opportunity to meet a market demand. There should be well developed systems and structures which ensure that quality produce is delivered on a timely basis. For example, systems for selling by standard measures, standards for grading produce quality, certification systems, adequate infrastructure and services, and market information and statistics on farmers.
b. Adequate provision of technical and managerial support to farmers

c. There should be transparent payment arrangements for both produce and inputs. This will help reduce side-selling.
d. Remunerate farmers to higher production and quality. This will also help reduce side-selling.
e. Not every farmer has the capacity or orientation to engage in high-end value chains therefore farmers should be selected on merit and partnerships should allow a transparent process for farmers to exit.
f. Integrating small famers takes time therefore pilots are necessary for lesson learning before scaling up. Although this should be led by private sector, the public sector support to the developmental costs will be necessary. E.g. engaging NGOs to facilitate the process.
g. Buy-in and alignment from all key stakeholders including community leaders, civil society, NGO partners, FBOs and the private sector, is critical for success. The linkage in these partnerships is not linear but rather a network of actors acting in the common interest of doing business successfully.

Figure 3.10: Empowering Communities through Market Led Development – the approach

STEPS	
1. Building strategic partnerships and selecting pilot sites	Build effective partnerships with key stakeholders - agricultural research organizations, extension services and government departments, NGOs, the private sector, and business support services
2. Participatory diagnosis (PD) and community visioning	Hold interactive dialogues with farmers and communities to facilitate collective analysis and understanding of community assets and opportunities, and to create a collective vision of desired future conditions
3. Formation of participatory market research (PMR) groups	PMR aims to strengthen existing groups and facilitate the formation of new groups (of men and women) who represent their communities. Groups are trained by market facilitators in PMR procedures for collecting and analyzing market information, and evaluating and selecting enterprise options, and in group dynamics.
4. Market and enterprise visits	Organise visits to major markets, supermarkets, hotels and restaurants, wholesale and retail markets, and food and agro-processing companies in nearby towns and cities including capital cities to broaden farmers' minds and to get information on possible produce
5. Evaluation of enterprise options	Market visits identify a portfolio of options with good market demand. These options need to be evaluated to match market demand with the biophysical and socioeconomic potential of the community to produce or supply the identified markets
6. Farmer experimentation and participatory technology development	Experimentation provides farmers with opportunities to try out a range of options and adapt them to their circumstances, and build local capacity to find solutions to production problems. Experimentation uses participatory technology development (PTD) approaches
7. Design and implementation of agro-enterprise projects	Experimentation leads to selection of appropriate options and farmers then plan for production, post-harvest management, marketing and other services for the enterprise
8. Facilitating support services for enterprise development	Support groups with business development services (microfinance, market information, credit, business skills training, processing and packaging, pricing). Support requires sustained interventions by a variety of stakeholders, including the private sector.

9. Strengthening local institutions and promoting gender equity	Ensure gender and equity by encouraging and sustaining active participation, and cooperation of both men and women in different wealth categories.

3.4 Policies and Legal Frameworks

3.4.1 Policy Frameworks

Although there is no comprehensive policy (set of rules) packaged as agricultural marketing, there are strategies (set of plans to reach developmental goals of sector) in the Food and Agriculture Sector Development Policy (FASDEP), Trade Policy and the Ghana Agricultural Investment Programme (GASIP) to improving agricultural marketing.

3.4.1.1 Food and Agriculture Sector Development Policy

The new direction for agricultural policy stated in FASDEP II is the adoption of a value chain approach to agricultural development and that value addition and market access will be given more attention. The strategies in the policy are consistent with this new direction. Agricultural marketing strategies in FASDEP II are listed in Box 1 and Box 2 below. Despite the specification of these strategies to address all the undesirable practices discussed above, the issues persist; this is probably because of implementation challenges. One such challenge is undefined institutional arrangement. While some of the strategies fall under direct responsibility of MoFA directorates (e.g. primary grading and storage under extension), others such as encouraging partnership between private sector and District Assemblies to develop trade with improved market infrastructure and sanitary conditions, require further clarification about the responsibilities of different directorates in their implementation.

Box 3: Strategies for Increased Growth in Incomes (FASDEP, pp 27)

1. Promote primary grading, processing and storage to increase value addition and stabilize farm prices
2. Collaborate with MoTI PSD&PSI to develop institutional capacity to support commercial scale agro-processing and stock management
3. Develop standards and promote good agricultural practices along the value chain (including hygiene, proper use of pesticides, grading, packaging, standardisation), to enhance quality and incomes
4. Promote linkage of smallholder production (including indigenous and industrial crops, livestock, and fisheries) to industry
5. Improve accessibility from farm to market centres
6. Promote formation of viable farmer groups and Farmer-Based Organisations with gender equity, to enhance their knowledge, skills, and access to resources along the value chain, and for stronger bargaining power in marketing
7. Advocate for improved rural infrastructure (transport and communication), and appropriate regulatory environment to enhance private sector investments and participation in delivery of services, including extension.
8. Advocate for the enactment and enforcement of laws on good agricultural practices.

Box 4: Strategies for Integration into Domestic and International Markets (FASDEP, pp 29)

Strategies for domestic marketing

1. Encourage partnership between private sector and District Assemblies to develop trade in local and regional markets with improved market infrastructure and sanitary conditions, and enforce standards of good agricultural practices.
2. Encourage the development of commodity brokerage services to support marketing of agricultural produce.
3. Create awareness of processors on GAP/HACCP.
4. Build capacity within MoFA to provide marketing extension.

Strategies for exports

1. Provide comprehensive support of improved access of operators to market information and intelligence, technology, relevant market infrastructure, and financing to enable operators to respond to the changing needs of markets. Operators will also be encouraged to identify market niches for new products.
2. Promote good agricultural practices, particularly for meeting sanitary and phytosanitary
3. requirements of importing countries.
4. Advocate a legal environment that supports agricultural production and trade contracts.
5. Collaborate with relevant MDAs to improve road access to link production centres to air and sea ports.

Strategies for post-production management in general

1. Improve supply chain management with emphasis on developing clusters of small to medium-scale farmers and processors to enhance access to technical advice and logistics.
2. Promote the utilisation of locally processed products and the production of quality and well packaged products to enhance demand.
3. Strengthen linkages between public and private sector institutions to support agro-processing.
4. Provide improved and targeted tax relief for agro-processors.
5. Promote cottage level agro-processing industries with interventions to enhance access to machinery and quality of products.
6. Develop standards to be at par with those of competing imports, and advocate for their enforcement

Other policy documents under the Ministry of Food and Agriculture are summarized in Table 3.8.

Table 3.8: Other MoFA Policy Guidelines and Strategies for Agriculture marketing

Policy Document	Policy guidelines/strategies
Livestock Development Policy and Strategy	1. Promote setting up of appropriate market, slaughter and processing plants 2. Promote hygienic handling of and safety of livestock products 3. Promote appropriate packaging and traceability of livestock products 4. Encourage the use of appropriate vehicles for haulage of livestock and livestock products. 5. Encourage patronage and consumption of locally produced poultry and nonconventional livestock. 6. Promote capacity building of stakeholders in marketing of livestock and products. 7. Encourage capacity building of stakeholders in value addition to livestock products. 8. Promote creation of satellite livestock markets
Tree Crop Policy	Improvement of Marketing through the Value chain approach through better organisation of the VC and support for the development of new products and marketing channels.
Rice Sector Development Strategy	1. Minimize postharvest losses 2. Improve the quality and competitiveness of local rice 3. Build capacity of marketers and processors 4. Improve access into producing areas and marketing centres.

3.4.1.2 Trade Policy and Trade Policy Support Program

Ghana's trade policy and the implementation programme, Trade Policy Support Programme also specify policies and projects that are relevant to or target agricultural marketing.

For domestic agricultural marketing, government would:

i. Intervene in farm gate prices of strategic products to stabilize prices for consumers and producers;
ii. Encourage downstream processing;
iii. Develop measures to promote all year round production;
iv. Support the development of farmer based organisations to reduce the potential for exploitation;
v. Develop an advertising strategy to promote Made-in Ghana goods.

MoTI has also prepared the Yam Sector Development Strategy and the Export Strategy. The Objectives of the yam strategy are to:

i. Enable a private sector-led policy in support of yam and agriculture development
ii. Professionalize the management of farmer associations for improved quality, consistency and returns
iii. Improve commercialization strategies focusing on positioning of Ghana Yams and explore product diversification for value addition and processing of new products
iv. Improve access to finance across the value chain and promote commercially-driven investments
v. Develop commercially-driven research and development and capacity building
vi. Improve compliance with quality standards and logistics for gaining competitiveness

Again many of these actions are with farmers but the institutional arrangements for working with farmers are not clear raising questions of coordination with extension services. The processes for undertaking the strategies are not clear.

3.4.1.3 Ghana Agriculture Sector Investment Program

GASIP is the current investment programme for the agricultural sector. Its strategic focus is to make smallholder more competitive by increasing their capacity to respond to market demand in terms of quality, price, time and volume. This will be operationalized through the formalization of relationships with agribusinesses, in order to give smallholders reliable access to technologies, financial services, factor and output markets and supported with investment in public and commercial infrastructure. The first two components of GASIP are: a) value chain development (agribusiness linkages, value chain financing) and investments in enabling infrastructure. The purpose of the agribusiness linkage sub-component is to help formalize smallholder's relationships with agribusiness partners. This means shifting from relationships based on trust to those governed by some regulation to provide better protection to parties. The second component on financing also involves relationship building based on financial transactions. The thrust of the sub-component is building capacity of rural and community banks and universal banks to manage risks and for them to leverage smallholder equity for loans. Again, the environment for this focus on financial transactions need some legal baking as a deterrent to default on agreements between parties. GASIP seems to assume that these interventions can be carried out in existing trust-based relations. The preceding review of marketing practices reveals that the issues that drove the above strategies in FASDEP and the Trade Sector Support Programme still exist and cause severe limitations to Ghana's agricultural marketing. This calls for a re-examination of policies and how implementation of the strategies may be improved. To begin with, the review of policies and

strategies reveal some overlaps of activities of MoFA and MoTI. Although the two ministries identify the same issues, there seem to be no defined boundaries as to what activities fall within their mandate. For example, a protocol for quality assurance would include standards development, training producers on GAPs needed to meet the quality standard, a system of testing to ensure conformity with the set standards and inspection for compliance and approval with permits. In the case of SPS, there is need for a reliable risk assessment. The mandates of the MDAs are discussed next to identify areas of overlap and complementarity between their activities.

3.4.2 Mandates of MMDAs in Agricultural Marketing

Several agencies are involved in the regulation or facilitation of agricultural marketing in Ghana. The public sector agencies fall under the Ministries of Food and Agriculture, Fisheries and Aquaculture Development, Trade and Industry, Environment Science and Technology, Local Government and Rural Development (Appendix A2 and A3). Private sector and Development Agencies are involved in market facilitation and they include: the Ghana Grains Council, providers of market/agricultural information (Esoko, Prep-eez, Farmerline, VOTO), trader associations such as Vegetable Producers and Exporters of Ghana, Ghana Association of Vegetable Exporters, Cattle Breeders and Traders Association, and Ghana Agricultural Producers and Traders Organisation (Appendix A4). The GIZ, USAID, CABI, World Food Program, FAO and the EU Delegation are some Development Agencies involved in facilitating agricultural marketing, particularly exports (Appendix A4).

MoFA is the lead agency and focal point responsible for developing and executing policies and strategies for the agriculture sector. MoFA's mission is *to promote sustainable agriculture and thriving agribusiness through research and technology development, effective extension and other support services to farmers, processors and traders for improved livelihood*[24]. According to its mission, MoFA's target groups are farmers, processors and traders. Under MoFA, PPRSD, VSD, and SRID have mandates directly related to agricultural marketing although activities of all the other technical directorates (APD, AESD - Post-Harvest Unit, DAES, WIAD and EMQAP of CSD) also facilitate agricultural marketing (Table 6). PPRSD and VSD derive their mandates from legislation. PPRSD is mandated under the Plant and Fertiliser Law (Act 803), and the Pesticides Control and Management Act (528).

The Ministry of Fisheries and Aquaculture Development (MoFAD) and the Fisheries Commission facilitate and regulate activities in the fisheries sub-sector. Regulation of fisheries is to ensure that Ghana complies with international standards for Illegal Unreported and Unregulated Fishing (IUU), to ensure that Ghanaian fish exporters continue to access foreign markets, especially the EU. The Fisheries Commission registers shipping vessels and issues permits for fishing, and imports and exports of fish. The Ministry of Fisheries and Aquaculture Development promotes fish health by facilitating the provision of needed infrastructure at landing sites. Although it has mandate over aquaculture, the Aquaculture Regulations of Ghana (LI 1968 of 2010) addresses production practices mostly. The only marketing regulations are on permitting for imports and exports of fish and sanitary inspection of landing sites. Issues of handling of fresh fish in domestic market (transportation, storage, display) are not addressed.

[24] http://mofa.gov.gh/site/?page_id=56

The Ministry of Trade and Industry (MoTI) has the mandate to formulate, develop, implement policies, and monitor and evaluate trade and industry programmes and projects. MoTI has oversight responsibilities over Ghana Export Promotion Authority (GEPA) and it engages in, development of policy/laws, market infrastructure improvement, export promotion through GEPA and GETIC, facilitating the work of quality assurance institutions, and resolution of disputes among traders[25]. From the above, it appears that the functions of directorates and agencies under MoFA and MoFAD are at the level of production and trade or marketing of raw agricultural produce. However, MoTI, by virtue of the GSA being under it, also gets involved in the setting of standards.

Food safety in Ghana falls under the Food and Drugs Authority (FDA) which is under the Ministry of Health. It derives its mandate from Public Health Law, Act 851, 2012, specifically section 7. The FDA registers food (imports and domestic), premises for food production, and food packaging. It inspects premises and enforces the provisions of the law in respect of food industry players. It also conducts tests for contaminants, including microbes and pesticides.

The Environmental Protection Agency (EPA) under the Ministry of Environment Science and Technology regulates pesticides and plant protection products. The agency registers, licenses, inspects, monitors and enforces the provisions of the Pesticides Control and Management Act.

The Food Research Institute (FRI) advices government on national food policy through its research into problems of the food processing, storage and marketing among other functions. It is also involved in food safety quality assurance through testing for contaminants. The institute is leader in the development of food products from local raw materials.

The Ministry of Local Government and Rural Development is involved in agricultural marketing through the Metropolitan, Municipal and District Assemblies (MMDAs). They are supposed to make provision for the inspection of foodstuffs and control the manufacture of food stuffs. The MMDAs are directly involved in the provision, maintenance, supervision and control of slaughter houses and market places. Around the area of slaughter of animals and meat inspections, the roles of VSD, MMDAs and FDA are clearly defined. The MMDAs provide and control slaughter houses; VSD certifies the health of animal for slaughter; the FDA inspects the meat and facilities and enforces food safety provisions.

The EPA's mandate on the regulation of pesticides covers registration of products, importers and distributors, while PPRSD ensures safe use of the products.

The activities of Ministries, Departments and Agencies (MDAs) appear to overlap in the following areas:

i. Export trade facilitation, including provision of market information and quality desired by the market. Exporters of agricultural produce benefit from trade fairs organized by GEPA and the market information gathered by the GEIC. Market information data collected by SRID is also available to exporters.
ii. Quality assurance is the area where there seem to be multiplicity of actors and activities. However, it is understood that GSA depends on the relevant technical departments to provide information (parameters) about the desired standards. The GSA in turn uses its network of international standard agencies to develop suitable and widely accepted standards for the country.

[25] See summary of personal interview with Mr Bartels, MoTI, Accra

iii. The GSA is also the custodian of the Weights and Measures Decree, NRCD 326, 1975 on the use of accepted standard weights and measures for commerce[26] but whether GSA has the mandate to enforce the decree is not clear. The Marketing Service Unit of SRID, however, has an interest in seeing transparency and fairness in agricultural marketing trade. Besides, the price information MSU collects and disseminates is based on established standard weights and measures for agricultural produce, which suggests that these weights and measures should be used in the market for trading. However, MSU-SRID does not have the mandate to enforce the weight and measures standards; neither does the GSA.
iv. Assignment of food safety regulation to the FDA means that its functions cut across activities of PPRSD, VSD and MoFAD; however, the FDA is the enforcing authority; PPRSD does the inspection and certification for SPS and pesticide residue compliance, while MoFAD focuses on provision of infrastructure for fishers. VSD and FDA are supposed to collaborate on meat inspection.

Trade facilitation is provided by both public sector, private sector and development agencies. Activities of public sector actors include provision of market information, training on GAPs, technology development and transfer, product development, and trade missions/fairs to promote market access among others.

Standards are developed and promulgated by the GSA. It provides inspection and laboratory services and post-registration market surveillance (details are provided in Table 4.6). The GSA conducts periodic testing of agricultural produce for non-approved pesticides and for pesticide residue levels (for compliance with export requirements); performs tests on packaging materials to assess suitability for various products; develops standards for agricultural produce, including facilitation of development of grades. The facilitation activities of private sector are detailed in the next section.

3.4.3 Private Sector Facilitators

Some of the private sector facilitators are the Ghana Grains Council, trade associations (Vegetable producers and Exporters Association of Ghana (VEPEAG), Ghana Vegetable Exporters (GAVEX), Federation of Ghanaian Exporters (FAGE), Esoko, Ghana Agricultural Producers and Traders Organisation (GAPTO), Livestock Breeders and Traders Association (LBTA), and other farmers' associations.

The Ghana Grains Council is a private not-for-profit organization aiming to modernize grain trade. It promotes standardization/grading, use of standard measures by farmers and traders, improvement of warehousing and introduction of warehouse receipt system. GSA standards have been adopted to ensure food safety and quality. GGC is developing posters for pictorial education. It is also in the process of introducing a commodity exchange for grains. Certification by GSA promotes traceability and to allow for recall. It also promotes good public health. The GGC collaborates with MoTI and USAID. GGC is interpreting the national standards for grains.

It is also promoting government policy of procurement of graded grain and purchase by weight in accordance with the Procurement Law – minimum 50 Kg weight, graded by GSA by institutional buyers – school feeding programme, hospitals, etc. It is also advocating for

[26] See summary of interview with Mr Eugene Adarkwa Adae, Director of Operations, GSA, Accra

institutional buyers to make payments on time to suppliers to attract farmers and sustain their interests to sell to them.

GGC is promoting trade by weight and grades in a more structured market. GGC has internal rules and regulations for association members. E.g. insurance for bigger warehouses; calibrated equipment for weighing; moisture metres to ensure 13percent moisture content; register with FDA, and must have Fire Service certificate. Agrochemical dealers must have permits.

Challenges being faced by the GGC are slow response of target groups to their interventions. Adoption of weights and measures by farmers is slow due to low response of the market to pricing by quality grades. Progress on quality level is much better. Major buyers such as the breweries have their traditional suppliers and this needs to change to open up the market. The poultry sector is a major market but users prefer to pay fob prices, implying that producers have to be competitive against imports. The incentive for farmers to adopt GAPs is premium prices for quality produce. There is need to harmonise efforts of regulatory bodies (PPRS, FDA).

Although 11 warehouses have been certified and 22 approved, fewer warehouses are receipting because of low response, which in turn limits their profitability and further awareness about the benefits of the warehouses. The Council Plans to use Esoko's platform to disseminate market information, including offers for sale to potential buyers. The Grains Council enjoys support of the Ministry of Trade, and development agencies – USAID, AGRA. The challenge for GGC in the progress of the WRS is the slow progress arising from lack of information on the benefits and costs to actors (warehouse operators, farmers, aggregators). Intensive education of potential players is needed through appropriate forums (extension meetings, seminars, field days). The Council should analyse benefits and costs for various actors and share with them at the sensitisation forums. Laws will also be needed to guide activities of parties involved in the warehouse receipts (financial institutions, warehouse operators, aggregators); this will help build confidence in the system.

Esoko, and others (Prep-eez Farmerline, VOTO) provide market and agricultural information. Their services are provided at cost[27]. There are also commodity specific trade associations who support their members with information and advocate for their interests[28]. They also access support services such as training for members and in turn convey information about government policies to members. The services are provided from the registration fees and membership dues. Their capacities vary. The export trade organisations are stronger than the internal trade associations. The exporter associations are able to self-regulate members to sanitize the export trade. GAPTO on the other hand seems to be spearheaded by one individual; this can limit growth and sustainability of the organisation.

The GIZ has facilitated the horticulture sector, from production to trade, through the EMQAP project, working through the Horticulture Unit of the Crop Services Directorate. GIZ has facilitated the development of a GhanaGAP for fruits and vegetables in collaboration with MoTI.

EU and FAO work closely with the Ministry of Fisheries and the Fisheries Commission to build structures for the effective regulation of the fisheries sector, particularly on IUU fishing.

[27] See section 3.7 for more detailed discussion of the MIS providers
[28] See section 3.8 for discussion on farmer and trader associations

CBI is implementing a project to develop a phytosanitary system for vegetables; the aim of the project is to develop technical and organisational capacity of the existing export related SPS system.

The Customs Service support PPRSD in ensuring vigilance in inspection of agro-produce crossing the country's borders.

3.5 Legal Frameworks for Agricultural Practices

Agricultural marketing should be conducted within a supportive regulatory environment; laws provide the framework for property and other rights, contractual relations and regulate the behavior of market actors to influence marketing outcomes positively. Regulation should not distort or reduce the efficiency of the market, nor increase cost of marketing or retard development of a competitive private sector. Although laws should be **enabling** for **economic activitie**s and efficiency, they can also be **constraining** for the public good (Cullinam, 1999 -FAO Ag Marketing Service).

Regulation aims to provide a level playing field for all actors to ensure fairness of trade, quality and safety of consumers. Facilitation on the other hand is to empower actors in the market to improve their activities to benefit themselves and consumers. Areas that need to be regulated are terms for trading (buying and selling and contractual enforcement); quality and food safety to ensure traders deliver wholesome produce to consumers; use of standard weights and measures to ensure uniformity, convenience and transparency in trade, improve efficiency in pricing to the benefit of all parties; regulation to ensure sustainable extraction of a common natural resource such as fisheries.

The following sections present the laws governing agricultural marketing practices and discuss issues of enforcement of the laws[29] (Appendix Table 5). The practices discussed include contracts between market actors, terms of exchange (buying and selling), actions of trader organisations and access to markets or control of produce into markets, grading and quality assurance, stocks and warehousing, slaughtering and meat hygiene, fish health, packaging and transportation. The laws are summarized as follows:

3.5.1 Farming Practices

A range of farming practices that affect quality of production are use of agro-chemicals; these are collectively termed Good Agricultural Practices. Farmers are informed about GAPs through the extension services. However, with respect to SPS measures and use of pesticides, the PPRSD has the mandate to train farmers or backstop extension with technical expertise. EPA regulates importation of pesticides (registration of products and distributors). The laws giving that mandate are Plants and Fertiliser Act, 2010 (Act 803); Pesticide Control and Management Act, 1996, Act 528. The food safety mandate of the FDA is under the Public Health Act, 2012 (act 851). Therefore, FDA tests products for contaminants (e.g. aflatoxins). The GSA also tests for maximum residual levels as part of the standards conformity assessments. However, neither FDA nor GSA deal with farmers.

[29] Discussion on enforcement is based on discussions with organisations whose mandate fall under the laws.

3.5.2 Trading (buying and selling) and Contracts

Sale of Goods Act, 1962 (Act 137) regulates the sale of goods, agricultural and non-agricultural (Cordero-Salas et al., 2015). Farmers and traders engage in contract but the level of formalization of contracts is low. Agricultural contracts are governed by the Contracts Act, 1960 (Act 25) which regulates contracts in various sectors of the economy, including agriculture. Cordero-Salas et al., 2015 also report that several enactments have been made to the law to regulate the agricultural sector. The Sale of Goods Act applies to every contract of sale of goods but it is not clear whether it applies to informal contracts, the form of contracts prevalent in internal agricultural marketing.

3.5.3 Control of Entry into markets

Ghana has an open market policy although there is no law supporting it. Actions of trader associations in urban markets create oligopolies and influence the levels of food prices. Traders control the numbers of traders and even for those with access, the amount of produce supplied to the market may be limited, especially when prices are falling (margins are squeezed). This practice is counter to the macro policy of free trade (trade liberalisation) but there is no law to counter this.

3.5.4 Grading Standards and use of standard weights and measures

Standards Authority Act, 1973 (N.R.C.D. 173) Standards Board (Amendment) Decree, 1979 (A.F.R.C.D. 44) govern standards formulation and promulgation. The Weights and Measures Decree, 1975 (N.R.C.D. 326) also rests with the Standards Authority. The levels of awareness and about the law and compliance is much for export trade than for domestic trade. The GSA's activities focus on standards. Labelling is a very effective instrument of enforcement. So is conformity assessments after registration. Development of agricultural standards is led by MoFA and recently the Ghana Grains Council for grains and warehouses. The Ghana Green Label is for fruits and vegetables and is developed for the export market. The Public Health Act, 851 requires that food for sale meets prescribed standards therefore the FDA is involved in setting and regulating food standards, including testing for conformity. Section 104 of Act 851 provides that food standards may be prescribed by enactment. The Ghana Green Label and the activities of the GGC in standards setting for grains and warehousing need to be backed by law. Enforcement of Weights and Measures Decree has been difficult probably because there are no regulations neither is the responsibility for enforcement assigned to any organisation. Pilots by MoFA, MoTI and GSA to introduce weighing of agricultural produce for trade in markets in Accra, Kumasi and Tamale failed. Traders complained about quality of scales provided for the pilots; but there is generally resistance to selling by weights. The Marketing Services Unit of SRID is planning to conduct a survey to ascertain if weights and measures being used in markets conform to the standards that SRID uses to report prices (e.g. 100kg bag or 50 Kg bag). A concept paper is being developed in collaboration with Esoko.

3.5.5 Stocks and Warehousing

Stocks are held by farmers, traders and processors. There is no quality assurance system in the informal marketing system and stock holders do their best to ensure produce is protected from

the elements, contaminants and pests. Stock holders may apply storage chemicals on stored produce. The use of pesticides is governed by the Pesticide Control and Management Act, 1996.

Ghana Grains Council has supported the development of standards for certification or approval of warehouse but there are 12 certified warehouses with total capacity of about 54,700 mt and 22 approved community warehouses. A Warehouse Receipts Bill is being developed by MoTI with inputs from the GGC.

3.5.6 Slaughtering, slaughter houses and meat inspection

The Public Health Act, 2012 (Act 851) caters for sanitation of slaughter houses, meat inspection in collaboration with the VSD, and transportation. Meat inspection shall be in accordance with the standards of the Codex Alimentarius Commission of the Food and Agriculture Organisation and the World Health Organisation. Animal Diseases Act, 1961 Act 83 mandates the VSD to examine livestock before slaughter. Under Act 851, slaughter houses shall be registered by the District Assembly. The MMDAs are responsible for providing the physical infrastructure. The FDA works with the MMDAs to monitor the facilities and ensure compliance through local surveillance of slaughter houses.

3.5.7 Fishing

Laws governing fishing are to ensure sustainability of the fisheries resources (Fisheries Act, 2002. Act 625), guard against Illegal, Unreported and Unregulated fishing (Fisheries (Amendment) Act 880 (2014) & Regulations (2015), LI 2217 and for the development of Aquaculture (Fisheries Regulation, 2010 (L.I.1968) with Aquaculture regulations). Act 625 establishes the Fisheries Commission, whose activities seem to be biased towards marine fishing and international fishing regulations such as those on IUU fishing. Fish health is captured under Fisheries Regulations (LI 1968). It prohibits the use of harmful substances in fishing and fishing facilities; use of chemicals or drugs in aquaculture shall be in accordance with the Environmental Protection Agency Act, 1990, (Act 490) & Pesticide Control and Management Act, 1996. Fish health has food safety implications therefore the FDA is also involved, although FDA presently does not have human resource capacity to monitor sanitation of fishing and fish storage facilities.

3.5.8 Packaging

Packaging of food is captured under Public Health Act 851. The FDA is required to register all food manufactured locally or imported, along with packaging. The Authority is also mandated to test food packaging materials in its laboratory. The packaging of raw agricultural produce (raw material of food) does not get coverage in the law.

3.5.9 Transportation

Act 851 provides that the FDA approves vehicles for transporting meat for sale. The law gives parameters to be met for approval. There are no provisions for transporting fresh perishable agricultural produce and livestock that are also susceptible to contamination and stress during transportation.

3.5.10 Financing

The Export Development and Agricultural Investment Fund (Act 823 (2011) and Export Trade, Agriculture and Industrial Development Fund Bill provide for the establishment of a fund to support exports, agriculture and industry. The purpose of the fund is to promote non-traditional export, Product Development, Capacity Building, Market Research and Development of Infrastructure, Development and Promotion of other entrepreneurial activities, Export trade-oriented activities and Agricultural and Agro-processing development[30]. The funding facility has grants and credit components. Farmers linked to processors, markets and aggregators, as well as investments for processing infrastructure are eligible. Sources of the fund include levy on dutiable value import and 10 per cent of the net proceeds from divestiture carried out by the Divestiture Implementation Committee. Agricultural insurance products are being developed but these are available for production issues only. There is also need for insurance after harvest for crops in storage or in transit to market centres, as well as for long distance traders themselves. Innovative low cost products for payments are also available (e.g. mobile money).

3.6 Service Providers (Regulation and Facilitation)

Service providers in agricultural marketing include public and private organisations and development agencies. The services cover both domestic and international trade so the focus of the section is on what services are provided and whether they are on internal or external trade.

3.6.1 MoFA's Plant Protection and Regulatory Services Directorate (PPRSD)

The services of PPRSD cover both domestic and international trade (imports and exports). Services cover measures for sanitary and phytosanitary standards conformity, plant protection and pesticide imports, use and management and seed sector development. Services of PPRSD are categorized as internal trade, external trade or both.

Internal trade

- Sample, inspect, analyze and test fertilisers distributed in the country and prepare appropriate manuals and reports of these
- Certification of Foundation and Certified Seeds and also Primary and Secondary planting materials
- Educate and create awareness for farmers on the benefits of certified seed/planting materials

External Trade

- Inspection, certification (Phytosanitary and marketing quality compliance), treatment (confiscation and destruction), and training on export requirements.
- Inspection, certification (import permits), release, (confiscation and destruction, return to country of origin), information on import requirements; post-entry quarantine, training on import requirements.
- Inspection on marketing quality standards on fresh fruits and vegetables for export

[30] http://moti.gov.gh/agency/export-trade-agricultural-investment-fund-edaif

- Provides information on IPPC and WTO on SPS Agreements through the National Enquiry Point (NEP) and any other information on export requirements.

Internal and External Trade
- Training of trainers in pesticide and fertilizer management for export certification
- Provide pesticides and fertilizer consumption statistics.
- Develop and publish information material, keep records of plant imports and exports, the importers and exporters, as well as the pests and diseases of quarantine importance.
- Registration of Seed Growers, seed dealers, seed importers and exporters
- Monitoring of seed and planting material production, outlets of seed dealers, importers and exporters

3.6.2 Training of major stakeholders (Seed Inspectors, Registered Seed Growers, Seed Dealers, Extension Staff of MOFA and NGO's etc).**MoFA's Veterinary Services Directorate (VSD)**

The VSD provides animal health services for the national livestock in order to further the expansion of the livestock and poultry industries in the country. Its responsibility is to ensure that meat and other products of animal origin are safe for human consumption. Services provided cover both internal marketing and international trade and cover the following:

Internal Trade

- Issues permits for movement of animals in country
- Certifies health of animals before slaughter

External Trade
- Link with the OIE to verify that animals and meat imported meet international standards.
- Inspection of livestock before they are imported
- Issues permits for importation of livestock

Internal and External Trade
- Records data on livestock imports, meat imports and animals slaughtered.

3.6.3 Marketing Service Unit of SRID (MoFA[31])

MSU/SRID's mandate in facilitating agricultural marketing is to collect, collate and disseminate market information, including commodity and input prices, trade flows and marketing costs for farmers, traders and the general public. Although the information and data is available to both internal and external trade actors, the focus seems to be more on internal trade. SRID does not have a regulatory function in marketing. Nevertheless, it has in the past liaised with GSA, MoTI and others to promote standards and measures in agricultural marketing.

Current activities of SRID include the following marketing related activities:

a. Collect and analyze market prices of various agricultural produce both at the wholesale and retail levels.

[31] See section 3.5 for more details

b. Monitor producer prices, farm input prices (monthly) and transport charges for agricultural commodities.
c. Liaise with VSD to collect, process and analyze livestock and poultry data.
d. Liaise with PPRSD to collect and analyze the flow of commodities across the borders.
e. Liaise with MOTI and GSS to collect and analyze agricultural imports and exports.

3.6.4 MoFA's Directorate of Agricultural Extension Services (DAES)

DAES is responsible/oversees agricultural technology diffusion through the management of an extension delivery service in the country. The extension service trains farmers on GAPs and new production technologies but probably not on market extension. The services are available to both internal and external trade.

3.6.5 MoFA's Crop Services Directorate (DCS)

CSD promotes crop production, and facilitates the processing, distribution and marketing of food, industrial and export crops. The Directorate led the development of the Green label – good agricultural practice development for fruit & vegetables, including development of standard operating practices. These standards were developed with the Standards Authority and are therefore covered by the standards law. Regulation will need to be developed to support enforcement especially on the domestic market. CSD oversees the production of quality planting materials and the efficient use and management of soil and water resources for sustainable agriculture production. These services target both internal markets and those who access external markets.

3.6.6 Post-Harvest Division of Agricultural Engineering Services

The Post-harvest unit is charged with reducing post-harvest losses. The Unit focuses on production of quality produce through appropriate processing and storage of target commodities. Its services include: Post-harvest extension, development and introduction of appropriate technology, technical backstopping and supervision of projects on post-harvest management. Its focus is on internal markets. Ensuring quality for exports is the responsibility of the Sanitary and Phytosanitary Division of PPRS.

3.6.7 Ministry of Fisheries and Aquaculture Development and Fisheries Commission

MoFAD oversees fish health and sustainable capture fishing and aquaculture/fish farming. It facilitates the provision of market infrastructure for internal trade. Fisheries Commission registers fishing vessels and gives fishing permits as well as permits for imports and exports of fish. Ensures measures against IUU. These services facilitate external trade.

3.6.8 Ghana Standard Authority

GSA is responsible for standards development and promulgation and custodian of Decree on weights and measures. Services include: analysis of food and food products (including agricultural produce) for pesticide, microbiological, heavy metals, histamine and mycotoxin analysis for clients. GSA certifies measurement equipment; calibrates equipment and conducts

post-certification market surveillance to monitor compliance. GSA issues permits for the exportation of processed fish. Services of GSA target both internal and external trade.

3.6.9 Food and Drugs Authority

FDA's core mandate is to ensure that all food processors, importers, exporters and venders are satisfactorily and duly registered, and to ensure that such registered parties adequately abide by regulations of the food and drugs law. FDA develops certified and codified food safety and quality assurance standards for the food industry. FDA controls meat production and assures the safety of genetically modified organisms for food, feed and processing. FDA services listed below, target both internal and external trade.

a. Food premises inspection and registration (locally manufactured food and imports)
b. Registration of food produced and imported, along with packaging material.
c. Inspection of slaughter houses and meat.
d. Food and food facilities post-registration market surveillance
e. Technical support in food safety and quality management to food industry, including testing and specification of safety standards
f. Food standards and legislation research

3.6.10 Ghana Export Promotion Authority

Focal areas of GEPA are market development, access, and penetration; product development and expansion of s33upply of priority products; and dissemination of export trade information (prices, market requirements including quality standards. GEPA's focus is on promotion of export trade. (See section 3.5 for core services)

3.6.11 Export Development and Agricultural Development Fund (EDAIF – EXIM Bank)

The agency facilitates funding for production for exports and for the domestic market.

3.6.12 Ghana Customs

Customs verify compliance with the quality standards of the products passing by the ports. This allows Ghana to take part in the international fresh fruits and vegetables trade. The focus is external trade.

3.6.13 Development Agencies

- GIZ has support horticulture exports through the Export Market Quality Assistance Programme. The Value chain finance fund also facilitates production for both domestic and external market.
- EU and FAO support the effective regulation of the fisheries sector, particularly on IUU fishing.
- CABI is implementing a project to develop a phytosanitary system for vegetables; the aim of the project is to develop technical and organisational capacity of the existing export related SPS system.

- UNIDO: Trade Capacity building programme for Ghana. The programme objectives are:
- Improve Ghana's export capacity
- Upgrade its conformity assessment institutions to ensure that products meet the stringent quality standards expected of exports
- Deepen Ghana's integration into the competitive global markets.
- DANIDA, USAID and EU provided support to the Private Enterprise Foundation through BUSAC to advocate for the inclusion of agriculture in the Export Development fund. USAID facilitates access to markets for producers of rice, maize and soybean through its projects (ADVANCE and FiNGAP). The Market Development for Northern Ghana (MADE) facilitates market development by linking farmers to aggregators and input suppliers. The focal commodities are rice, tomatoes, groundnuts, chillies and livestock.

3.7 Institutions providing Marketing Information and Intelligence

3.7.1 Public

SRID-MSU. Formal public market information providers are the Statistics Research and Information Directorate (SRID) of MoFA, Ghana Export Promotion Authority and Ghana Export Information Service. The FDA, PPRSD, VSD, and the Fisheries Commission provide information in carrying out their mandate. The private sector actors are Esoko, VOTO and Prep-eez. Development partners such as the FAO also provide information on sustainable fishing and anti-biotic management in livestock. Only SRID focuses on internal trade. Enumerators of SRID collect wholesale prices from 184 market centres across the country and disseminates this information weekly through radio, indicating where the highest and lowest prices of commodities pertain as a guide to traders on where to source produce from. The information is also available on request. SRID also collects information on product flows and transport costs but this information is not as readily available as the price information. The disadvantage of the SRID price data is that it is not available in real time and give high variability in prices, weekly dissemination may be too late for trader or farmer decision making. The prices are not farm gate prices therefore farmers' expectation of prices will be overestimated. On the other hand, lack of farm gate prices leaves room for traders to decide what prices to pay famers at any point in time. The capacity of the MSU under SRID is low. There are only 5 staff stationed at headquarters and they rely on the Departments of Agriculture in the districts to collect the market information. The staff at headquarters should monitor field staff but are constrained financially.

GEPA and GETIC. The export promotion authority is the other market information service provider (section 3.4.13) and they target exporters only.

GEPC was established by Act 396 in 1969 as an agency of the Ministry of Trade and Industry with the mandate to develop and promote Ghanaian exports. The change in status of the export promotion council to an Authority is in accordance with the Revised Laws of Ghana Act 1998, (Act 562) (1) of the Ghana Export Authority Act, 1969 (NLCD 396). The revised laws help to more clearly define the core functions of GEPA in terms of the marketing and promotion of NTE products. GEPA's clientele include 17 export trade associations (about 3,000 companies). GEPA relates to these clients both on individual corporate basis and as groups / associations. GEPA also acts as an interface between these exporters and other public organizations.

Areas of focus of GEPA are:

- Market access and development and expansion of supply base for selected products. GEPA facilitates trade missions, contact with trade partners, trade fairs and exhibitions, buyer-seller meetings and conferences, group marketing schemes. Other instruments are contract production/supply schemes, Export Production Village Schemes, and Technical Advisory Services.
- Export Human Resource Capacity Strengthening through operations of an Export School that organizes export management, product development, market development and other specialized trade related courses, workshops and seminars for export companies, trade facilitators and businesses.
- Coordination of Export Development Activities through consensus building with Stakeholders by holding consultative Exporters' Fora and round table consensus building activities with various stakeholders with the view to coordinating export related programmes.
- Export Trade Information Dissemination and Communication support through the maintenance of a Trade Library, trade publications and operation of an internet based Export Trade Information Centre.

GEPA houses the Ghana Export Trade Information Centre. The information centre provides, product and market information to the business community; refers exporters to other important sources of information; operates a cyber café with ten internet - connected computers for clients to use for business information and communication; disseminates information on topical trade events and issues to the business community through email broadcasts. GETIC assists exporters who deal in food export to register their food facilities as well as products intended for the USA as required under the Bio-Terrorism Act of 2002. The FDA is responsible for the registration.

GETIC networks with international trade promotion organisations to source for information for its clients. The sources included, International Trade Centre (ITC)/WTO/UNCTAD, Centre for the Promotion of Imports from Developing Countries (CBI) in the Netherlands, UK Foods Standards Authority (FSA) (e.g. received alert on Khebab Powder and New Food Control laws at Heathrow); International Customs Organization (e.g. information on major amendments in Harmonized Codes System); UNCTAD Commodity Price Lists for monthly free-market prices and price indices for selected commodities; EU Export Helpdesk (an online service provided by the European Commission, to facilitate market access for developing countries to the EU. GETIC disseminates trade information through print publications which are available at GETIC. Other dissemination channels are email broadcasts, direct exchange and publication on GEPC website and Newsletters. GEPA is well resourced and has set up the Ghana Export Trade Information Centre as a one-stop shop for export information. However, agricultural exports is only one segment of its activities. The GEPA and GETIC are more engaging and proactive than the Market Services Unit of SRID.

3.7.2 Private

The private market information service providers are Esoko, Farmerline, VOTO and Prep-eez. Access to these private MIS sources can be limited because the users are charged for the services. Trade Associations also support members with market information beyond prices.

Esoko is the leader in provision of market information using ICT. It was set up in 2006 and started with the collection, collation and dissemination of market prices of agricultural commodities. Initially farm-gate, off-lorry, wholesale and retail prices were to be collected. It has set up a common platform for market prices, e-extension; it also matches buyers and conduct surveys. However, Esoko collects only wholesale and retail prices. Esoko covers 43 markets (including two livestock markets in Ashaiman and Kumasi), and plans to add 10 more markets by the end of August 2016. The company also disseminates information on weather, and agricultural practices, on request. Esoko supports the dissemination of government policies; e.g. information on fertilizer policies through SMS and voice.

Price information is collected by two categories of enumerators – the company's own enumerators and enumerators under MoFA. The market agents are assigned to specific markets and are equipped with Android devices for the data collection. Esoko supports the MoFA price enumerators with resources to facilitate their work. The price data is provided weekly; but the data is also aggregated into a monthly index. The difference in methodologies of MoFA-SRID and Esoko is that MoFA reports the average prices in three markets while Esoko reports the most common prices in the markets. The sources of price information is traders. Prices are collected either daily or on specific market days, where markets are celebrated periodically. The weather information and agricultural tips are sourced from Ghana Meteorological Agency and CSIR respectively.

Information is disseminated to individuals through call centres and SMS to individuals registered on their platform. Registrations is by individual, but organisations also register for farmer groups (e.g. Vodafone Farmers' Club, MoFA).

The information is made available to selected media houses – Business and Financial Times, Ghana Financial magazine, Citi FM, and TV 3. Data can be provided on request with a charge. The charge for registration is GHC2/year. The services are demand-led. Although Esoko started with market prices, other services have been added because of the need and demand for those services. Types of information demanded is seasonal. At the beginning of the season, farmers request information on weather, and specific agricultural practice; after harvest requests for price information increases.

Users of information are willing to pay for information that is beneficial to them. However, revenue generated from registration fees and payments for services is not adequate to sustain services. Therefore, Esoko finds other sources of funding. E.g. it has a programme to support 227 female farmers through the Ministry of Gender and Social Protection.

Esoko strongly agrees that the numbers of staff needed for production and dissemination of information is adequate. However, upon recruitment there is usually a need to train staff on the use of IT. The company has the equipment for its work. Esoko collaborates with SRID, MoFA, Ministry of Trade and Industry.

Other MIS providers

Farmerline is a social enterprise specializing in the development of web platforms and mobile applications to disseminate and collect agricultural data to/from smallholder farmers. Since

its launch in 2013, Farmerline works with farmers in five (5) countries (Cameroon, Ghana, Malawi, Sierra Leone, and Nigeria), The company provides bulk voice messages to farmers on prices, GAPs and the weather.

VOTO is a social enterprise. It uses a mobile phone platform to make it easy for businesses, governments, and NGOs to share information and gather feedback through interactive SMS or voice calls in local languages.

Prep-eez was designed in partnership with WAAPP and the World Bank, as part of effort to address the shortfall of adequate dissemination and adoption of successful technologies generated from West Africa Agricultural Productivity Programme (WAAPP). e-Extension is being considered to plug the loopholes in the existing extension services by providing farmers with affordable direct access to content through modern technologies like the mobile phone, improving extension officer to farmer ratio, and facilitating effective knowledge sharing without limits to language, literacy, distance and affordability. Prep-eez also offers farmers access to demand-driven time-critical content and real-time access to any extension services no matter their location, language and level of education. The e-Extension project is being delivered in partnership with WAAPP within the context of e-Agriculture (innovative use of existing or emerging information and communication technologies (ICTs) with a primary focus on all facets of agriculture).

The Ghana Grains Council also provides market information as part of its facilitation activities. It has market and trade development initiatives, provides and training and capacity building to members and specifically provides market information, business advisory services and market access services, through publications, posters for pictorial education, and radio programmes in local languages (See Table 7, Section 3.3.3).

Trader Associations. The Services provided selected trader associations (VEPEAG, GAVEX, LBTA, GAPTO) are presented in section 3.8.

3.8 State of major agricultural marketing organisations

3.8.1 Internal Trade (FBOs, Cooperatives, firms and individuals)

Farmer based organisations are of different sizes and forms. The Peasant Farmers Association of Ghana, the Ghana Agricultural Producers and Traders Association and smaller farmers and traders organisations in the Bolgatanga area were randomly selected for study based on production of and trade in tomatoes, and trading in fresh fish. The membership, scale of operations, of individual traders, trade facilitation activities and challenges faced are discussed.

3.8.2 Peasant Farmers Association of Ghana

The association was set up in 2005 at the instigation of Oxfam, following the trade talks in Doha and the Doha Development Agenda under the WTO. PFAG is a not-for-profit network of 1,517 farmer organisations found in at least 5 districts in each of the10 regions of the country. The secretariat of the Association is based in Accra and it reaches out to its members through focal persons in members' communities. The focal persons also rely on proactive farmers in the FBOs to reach farmers.

PFAG is an advocacy organisation that organizes its members or leadership of member FBOs for advocacy. The association also implements projects to help FBOs in production. Advocacy is for improving implementation of agricultural policies. The objective is to improve investment in agriculture based on the Maputo Declaration of allocating 10percent of government expenditure to the sector and to track the share of that spending that is on smallholder agriculture. Some of the policies they advocate on are, the fertiliser subsidy, extension, mechanisation and credit for the modernisation of smallholder agriculture.

On fertiliser subsidy they advocated for the level of subsidy and the distribution to reach smallholders; on extension, they have been involved in the review of the extension policy and employment of more female extension staff to increase reach to women; on credit, they partnered Concern Universal to pilot a maize value chain development project, which linked farmers to input supplier and a microfinance company, through a cashless credit scheme. The scheme was partially successful because farmers still defaulted therefore there was no continuation since the plan was to operate a revolving fund.

The following support services have been provided to farmers through projects:

a. Negotiations on prices
b. Training on good agricultural and marketing practices
c. Encouraging farmers to store grain for better prices during the lean season; however, farmers are unable to store grain for long because of pressing cash needs.
d. Linking farmers to markets outside the community through arrangements with off-takers, who also purchased using standard measures to off-takers
e. Linked members to financial service providers through projects.

PFAG supports internal marketing only. Their observation is that smallholder farmers are not entrepreneurial compared to traders who are able to forecast and manipulate the system to their advantage. Therefore, there is an imbalance in power between the parties in trading.

Challenges:

1. Resources – funding and staff to reach out to members at the community level.
2. Farmer are unwilling to repay loans
3. Farmers have several problems which cannot be addressed by single projects

3.8.3 Ghana Agricultural Producers and Traders Organisation (GAPTO)

GAPTO is an umbrella organization of trader associations and farmers in Ghana although about 70percent of members are traders' organisations based in major cities of the country. Most traders involved in agricultural marketing in Ghana are organized into commodity based associations. The associations are based in cities and metropolitan areas such as Accra, Kumasi, Takoradi but source produce from all over the country. GAPTO was formed in 1992 as an umbrella organization for associations in Agbogbloshie, one of the largest food markets in Accra, and other parts of the country. It was re-organized and registered as a trade association with the Registrar General in 2004. GAPTO's vision is to improve production and trading in terms of value and

volumes and to help minimize, if not eliminated, post-harvest losses. The organization's mission is to design programs aimed at ensuring that the vision is realized.

GAPTO actively promotes and controls trade in different products in the markets by supporting individual associations in managing supply in order to avoid seasonal gluts in the markets as a result of seasonal production patterns. GAPTO also facilitates access of traders to information about supply conditions, weather and road conditions especially in poor access areas. GAPTO supports traders to organize logistics for procurement of produce, especially from neighbouring countries. GAPTO arbitrates disputes between different associations and between their members and non-members and is also able to intervene on behalf of their members to recover monies paid to farmers when the latter fail to deliver produce as promised. GAPTO advocates for improved market services from the City authorities, especially in Accra; it provides representation to District, Municipal or Metropolitan Assemblies. It is therefore a liaison between its members and public sector authorities or development agencies, when it comes to initiatives to support traders.

For example, the City authorities in Accra have engaged GAPTO on the plan to construct model markets, with enhanced facilities, for the city. In 2005, GAPTO, was funded under the MISTOWA project to establish the Agribusiness Information Centre, where members could access market information either from notice boards or from the TradeNet platform. Traders could access information on prices, volumes, weights etc. on all crops, livestock and fish. The information was uploaded onto computer/internet and made available to the producers and traders. Members were also given price information via SMS at no cost. There was an internet service in their offices which members could access at a token fee. GAPTO had also worked on the TIPCEE project although the nature of engagement was not disclosed.

However, during a visit in June 2016 for the present assignment, the GAPTO office had very little activity. There was only one computer in the Chairman's office and a secretary. There was also no notice board displaying prices. So the organisation does not seem to have the staff and probably finances to sustain its activities.

GAPTO is financed by contributions of individual association from their dues. As long as the services from GAPTO continue to flow, trader associations will be happy to make these contributions to payment for office premises and staff salaries.

3.8.4 Cattle Breeders and Traders Association, Ashaiman

This is a private association of livestock traders. They do not breed although it is one of their goals. They import cattle, sheep and goats from the West Africa sub-region, mainly Burkina Faso, Nigeria, and Niger. The association was formalized in the 1990s. Turaku as one of two international livestock markets in Ghana; the market was established out of need for an assembly point for customers. The other is Mayanka market in Kumasi. There are other weekly markets at Juapong, Yeji, Buipe, Tamale, Bolga. These feed the international markets. Registered members of the association pay a registration fee for their commitment and monthly dues of GHC5 (under review for increase).

Services provided to members include:

a. Weekly livestock prices from Esoko. Members have difficulty in accessing the platform therefore they make phone calls for the prices.
b. Association serves as conduit to access training for members from organisations such as WATH-USAID
c. Association has a platform that links sources of livestock, types and 5 – 8years old. Members rely on buying agents to feed them with needed information. Traders are linked to buyers by middlemen, also known as landlords; the landlords are under the Association and are paid a commission for each transaction. Presently price of an animal includes a GHC50 commission for broker services of the landlord. Buyers of animals from the cattle market are mainly butchers. Traders sell to butchers on credit, which is repaid after sale. The association is aware of this arrangement and can mediate if there are disputes.
d. Association provides information on government policy to members (e.g. the veterinary drug bill and Animal production Bill). These concern welfare of animals, e.g. during transportation, and antimicrobial resistance (workshop organized by FAO, representation by executive Secretary of the Association).
e. Members are educated on how to get the veterinary service to regularly check their animals for symptoms of ill-health and to advise them; but this is not working.
f. Association does not access loans for members because of experience of default. On financing, the interest rate is too high. Members are advised to use Ecobank for payments.
g. Association advocates for members and advises members on how to behave and be disciplined on the roads when livestock are being transported. Traders experience harassment by the police and often the association intervened to bailout members caught in harassment situations. Association has advocates on:
    i. the need to upgrade quarantine status of entry points along the country's borders
    ii. For vehicles transporting livestock to be treated as ambulances so that there are minimal delays in their movements.
    iii. There is no use of standards in livestock marketing. Animals are assessed by the eye and this is the general practice in the WA sub-region, except Senegal. Working to introduce scales.
    iv. Costs of services provided to members are covered from the registration and monthly dues. So Association sometimes looks for funding to carry out their activities.

Association is aware of the Public Health Act, 2012 (and advocates for lorries transporting animals to be treated as ambulance). Executive is also aware of the need for livestock to be inspected before moving livestock internally but application of regulations to internal trade is difficult because of limited marketing points for holding animals.

Challenges

1. Road harassment by police. Not less than GHC3,000 provision per truck load from Bolgatanga to Accra, for extortions from police
2. Difficult to get trucks. Traders depend on trucks for general goods. So, that return trips are not empty.

3.8.4.1 Farmer and Trader Organisations in a Local Market (Bolgatanga)

Summary of interviews with small farmers and traders

Farmers

- Small scale
- Sell to traders, who also operate on small scale, in the informal market
- Prices received by farmers are determined by bargaining but relative bargaining power of farmers is stronger in the off-season. Farmers' perception is that they receive low prices. But farmers are unable to store up to this season either because of the perishable nature of produce or that there is pressure for cash.
- Cold storage infrastructure is required for fish traders.

Challenges faced by small farmers are inadequate market space, poor market infrastructure, low prices and limited storage facilities especially for fish and tomatoes. Producers of tomatoes and fish also face strong competition from Burkina Faso, although for tomatoes, seasonality in production is a factor.

Traders

Scale of business is small and two of the four commodity trader groups interviewed were in some organized groups for welfare of members, price negotiation, and facilitating access to credit and inputs. Contracting relationships between traders and producers are scarce. Fish traders finance nets for fishers and in turn can have trade credit for very short periods, usually per batch. Tomato wholesalers may also provide trade credit to retailers as in the case of fish. Challenges facing traders are limited access to finance, poor market infrastructure (space and quality of infrastructure). Interestingly, price is not an issue for traders.

Common challenges for both farmers and traders are poor market infrastructure and lack of access to capital to expand the scale of business.

3.8.5 External Trade (Exporter/Importer Associations)

Vegetables Producers and Exporters Association of Ghana (VEPEAG) is a voluntary association of 380 members, consisting of lead commercial exporter/nucleus farmers, individual growers and farmer groups. The nucleus farmers procure produce from individual growers and farmer groups to supplement their own production for export. The association has a national coverage but members are concentrated in the Central and Eastern, GAR, VR and Ashanti regions.

Services provided to members are price information, training on GAPs (including quality requirements of the market and certification processes), control on grades into the market; bulking of produces for export at association's packing shed. They also access markets for members and link farmers to buyers.

VEPEAG is a member of the GSA Agriculture Committee and therefore contributes to standard setting for vegetables. Other partners are agro-input shops, NGOs, Fruit Logistica for international fairs, Ghana Export Promotion Authority and GIZ. Members sell produce by grades because of their involvement in the export market. Containers (packaging boxes) are standardised by weight (Kg). Members of the association are required to register with the Civil Aviation, PPRSD, EPA, the Narcotics Control Board (NACOB). The main source of funding for VEPEAG is the dues paid by members; the association also reaches out to international NGOs for support but response is low.

The association needs access to software on market information and GAPs in the Value Chain. For now, they get information from the market and text messages from ESOKO. VEPEAG prefers price data at the farm gate; current prices are from markets and do not meet the needs of farmers. Such prices for farmers are not realistic because they include marketing costs between the farm gate the point of sale.

Main suggestion is that agricultural marketers in Ghana should use standards and standard weights and measures. This is of importance to the association because the destination markets deal in standard weights and measures, but the internal market from where the produce is procured does not promote use of standard weights and measures. The exporter association will like the law on standards to be enforced, through awareness creation, ensuring availability of quality equipment on the market and assigning responsibility for enforcement. Also, traders and farmers should be educated on the use of appropriate packaging and transportation especially for fruits and vegetables.

4. SUMMARY OF FINDINGS AND CONCLUSIONS

Analyses of the strengths, weaknesses, opportunities and threats of the agricultural marketing system, the regulatory environment, and the trader and farmer organisations/associations guide the conclusions and recommendations from this research. The findings are summarized into SWOT analyses for the agricultural system, the regulatory environment, farmer and trader organisations.

4.1 SWOT Analyses

4.1.1 Strengths Weaknesses Opportunities and Threats of the Agricultural Marketing System

The strengths of the agricultural marketing system (Table A6) are, well organized trader groups, non-interference of the state in marketing, in price setting or product flows; existence of a system of grading and standards for use by traders, and spatial market integration.

The weaknesses are the high level of informality, prevalence of face to face trading and associated high transactions costs, which pose challenges for facilitating and regulating the system to create level playing field and food safety. Imbalance in market power between traders and farmers due to high level of organization of traders compared to farmers, gives traders the opportunity to collude. Similarly, aversion to use of standard weights and measures in trading leads to preference of face to face trading which increases transactions costs. There is low price incentive for investments in quality and this feeds into disregard for quality and safety of food commodities, in an environment of pervasive ignorance about critical food safety issues such as aflatoxin contamination and its effects on human health. Farmers and traders do not have the ability to use higher level of ICT tools to access information.

There are several opportunities for development of agricultural marketing to enhance its contribution to agriculture performance and food security. These include growth in demand for food in general; preference for quality produce from a growing middle class and an expanding

agro-industry; interventions linking small farmers to nucleus farmers, larger aggregators and off-takers; emergence of commercial market information service providers; use of ICT for agricultural and market information; availability of standards for fruits, vegetables and grains; and the promotion of grains trade by the GGC.

Threats to the development of agricultural marketing include poor road infrastructure; high costs of transport off-trunk roads; rising standards on international markets especially for horticultural produce (GAPs, ethical standards and carbon footprints) (Table A9).

4.1.2 Strengths Weaknesses Opportunities and Threats of Regulatory Environment

There is a well-established system for facilitating and regulating marketing but more so for quality control than for fair play in the market. Technical capacities of regulators are high and there are laws governing the work of regulators. However, capacity for enforcement is low (low staff numbers, limited funding, testing laboratories are concentrated in the National Capital). The Marketing Services Unit of SRID is weak and does not engage with farmers and traders for internal marketing; meanwhile smallholders and small traders are not aware of laws. There are some overlaps of functions, especially of MoFA and MoTI. Some potential threats are budget cuts and recruitment freezes confronting public organisations; these can reduce effectiveness of regulatory bodies, especially for monitoring and surveillance activities (Table A7).

4.1.3 Strengths Weaknesses Opportunities and Threats of Farmer and Trader Organisations/Associations

Export trade associations are well informed about laws and the risks and costs of non-compliance. They can advocate for members, self-regulate and contribute to policy dialogue. This is not so with small farmers and small traders because of the scale of their operations and inward looking attitudes, especially of traders. Major threats are resistance to standards, poor roads and facilities within markets, and limited access to capital for expansion (Table A8).

4.2 Conclusions

Agricultural marketing needs to be transformed from a predominantly informal system to a predominantly formal system if it is to support growth and transformation of the agricultural sector. This means that market actors should change marketing practices from the farm level down the value chain. Knowledge about how to change the practices exists but use of such knowledge is low because of lack of awareness, low incentives to change, especially where change involves cost and consumers do not demand quality, or there is resistance to change on the part of farmers or traders.

Facilitating and regulatory systems exist to influence change but progress is more visible in external trade than in internal trade because of the demands of the former for quality and standards. However more needs to be done to improve compliance of exporters with import requirements. The informal nature of internal trading is a challenge to facilitate or regulate. Regulatory frameworks are geared towards food safety, ethical fishing and sustainability of fisheries, and standards but enforcement is stronger for food safety and ethical trade. Multiplicity

of regulatory functions across organisations and laws seem not to pose challenges of enforcement because each law mandates an organization for its enforcement. Discussions with the regulatory bodies reveal that each knows the scope of their responsibilities, however, the influence of the FDA in the areas of other organisations is sometimes seen as usurping of roles (FDA and fish health), especially if the FDA is seen as not having the technical capacity in terms of human resource. Multiplicity of agencies can have implications for effectiveness and costs.

The administration of the laws take the form of registration, licensing or certification, testing, and monitoring or post-registration surveillance; and enforcement is by withdrawal of licenses, renewal of certificates, seizure and destruction. Because registrations and certificates are essential for businesses to operate, response of market actors is positive. However, post-market surveillance, which is a key factor in enforcement is weak due to low capacities in human and financial resources. This area needs to be strengthened either by new recruitment and increased financing, or by strategies that can increase effectiveness at lower cost (e.g. use of decentralized structures or outsourcing some services).

Public sector agencies are also involved in trade facilitation through training and information sharing. There are two public sector market information providers, one for domestic marketing and the other for exports. The MIS for exports is stronger and more engaging while the domestic service provider tends to concentrate on wholesale and retail price information collection and dissemination. The domestic MIS system should be strengthened.

Trader and farmer organisations carry out facilitating roles as well for their members. The exporter associations have more educated and enlightened members and are therefore expected to understand issues, especially in relation to product standards. However, the system is just self-correcting after several incidents of notifications of substandard produce exported to the EU. This is evidence that if the domestic market begins to demand standards, traders will conform. But it will take some effort to plant the seed for formalisation through say institutional buyers. The opportunities of formalisation are emerging through linkages between farmers on the one hand, and formal aggregators, and off-takers on the other. Agricultural commercialisation models of nucleus-farmer outgrower linkages also offer opportunity and demonstrates the benefits of selling according to standards to farmers.

The marketing practices for agricultural inputs is also informal. Dealers do not have appropriate storage environment for agrochemicals and seed and tend to stock these inputs alongside general merchandise. Also, malpractices among input dealers are common and this is due to large numbers of unregistered dealers.

Discussions with regulators revealed that existing laws are adequate to achieve their goals. However, on Weights and Measures law, there is no clear designation of responsibility for enforcement or promotion because the Standards Authority claims[32] it is not a regulatory body.

5. RECOMMENDATIONS

a. Upgrading Value chains and formalize marketing

[32] Interview with Eugene Adarkwa-Addo, Director of Operations, GSA

Lessons from existing models should be used to upscale the upgrading of value chains for grains and cassava. Efforts are being made to linking up with the breweries and the vegetable oil processing industries. It will be useful to upscale these arrangements with the lessons outlined in this report. This will require active participation and leadership pf the private sector, working with strong farmer organisations. The upgrading should target supermarkets to reduce their imports of locally produced agricultural produce (tomatoes, rice, vegetables). But this means increasing the capacity of farmers to produce these commodities.

b. Develop necessary marketing infrastructure

Specific requirements of the value chains for upgrading are:

1. Fruits and vegetables - availability of seed of desired varieties; irrigation; cold chain; improved transportation (e.g. boxes for transporting tomatoes); packhouses in production hubs
2. Roots and tubers – appropriate transport and storage services; harvesters especially for cassava
3. Cereals – certified storage infrastructure enhanced with cleaning and drying facilities, awareness creation about aflatoxins and education on their control.
4. Legumes (soybean and groundnut_ - same as for cereals
5. Meat – abattoirs, appropriate transport vehicles
6. Fresh fish – appropriate transport
7. Train and certify warehouse managers and floor workers in post-harvest management.
8. Liaise with packaging industry to develop standards for quality packaging for agricultural produce (dry and fresh produce, and for bulk and retail quantities). These should be consistent with the standard weights and measures allowed by law.

c. Align institutional arrangements for effective regulation and facilitation of marketing

There are so many organisations involved in agricultural marketing. Although the agencies see their roles as well defined, it is important to define a common structure or framework with a clearly defined leadership for these organisations. It is recommended that MoFA and MOTI should constitute a permanent Technical Team to lead in the development and promotion of agricultural marketing policies, laws and regulations and define oversight responsibilities for their enforcement.

The item on *foods* under section 7 of the Public Health act covers packaging, meat inspection and transportation, and labelling of agricultural produce that is consumed. Apart from meat inspection, which responsibility is shared between the FDA and the VSD, the other areas appear orphaned especially at the primary production level, because the FDA activities do not cover fresh produce on in local markets.

d. Harmonize existing agricultural marketing policies, strategies and regulatory frameworks

There are several policy documents and strategies within MDAs. These policies need to be collated into an umbrella marketing policy, with coherent implementation plan for harmony and effectiveness. There are also marketing laws with no assigned enforcement responsibility (e.g. weights and measures). There is a need to develop regulations for such laws and to assign oversight responsibility for their enforcement to an appropriate agency. The laws governing livestock sector are dated and require urgent review.

Law enforcement agencies should be sensitized on the need to facilitate rapid movement of agricultural produce such as livestock and other perishable produce.

e. Improve support services for marketing

The mandate MSU of SRID to deliver wider range of marketing services to farmers, by backstopping the Agriculture departments in the districts. Marketing services units could be established in the technical directorates of CSD, APD, and PPME of MoFAD and at the district agriculture departments, to take up responsibility for facilitating marketing activities of farmers. MSU of SRID will engage producers more closely (for internal marketing) in the manner that GEPA does with exporters. However, MSU services will support only formal market linkages between farmers and buyers.

Regulatory bodies have low reach to their clients or target groups for monitoring and surveillance therefore delegating decentralized agencies to carry these activities can improve the situation. An alternative will be to out-source the services to appropriate third parties. This may require special expertise and criteria for engaging such third parties.

Vigilance in the monitoring for SPS compliance by exporters should be increased and penalties reviewed for severer sanctions. There is need for an independent study to identify loopholes that contribute to the export of sub-standard produce.

There is no professional requirement for trading in agrochemicals in particular, therefore the human resource capacity is very low. Training of dealers should be intensified. Monitoring dealers and enforcement of regulations is weak because of inadequate logistics of the EPA and PPRSD. GAIDA appears to be a strong lobby group therefore the association could be partnered to monitor its members but EPA and PPT+RSD should expand the registration of dealers to facilitate the effectiveness of GAIDA.

f. Support Farmer Organisations and Trade Associations to Pilot Value Chain Partnership Models in alignment with government strategy for agroindustry development

Trade associations involved in both internal and domestic trade need constant training on best practices in marketing. This should include training on how to identify market opportunities, and how to link up with major buyers. They should also be provided with technical and managerial support to organize production. This requires training by specialist extension agents. MoFA should therefore review its policy of a generalist extension agent in light of the value chain approach it is pursuing. For exporters, there should strengthening of the SPS system and constant sensitisation

on the laws of importing countries as well as on the consequences of non-compliance for their businesses and for revenue to the country.

g. Improve Access to Financial Services

Lessons from ongoing financing support programs should be harness for wider application. These include the Outgrower and Value Chain Fund of GIZ; Financing Agriculture in Ghana project of ADVANCE, and the Export Development and Agriculture Investment Fund. This should be supported with analysis of minimum financing requirements of various actors in the different value chains. The analysis should disaggregate requirements for working capital from investments.

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ANNEXES

A1a. List of Organizations Interviewed

Organisation	Position
Marketing Services Unit	Head of Unit
Esoko	Programme manager
Vegetable Producers and Exporters Association of Ghana	Executive Secretary
Ghana Grains Council	Program Officer
Plant Protection & regulatory Services, Pokuase	Ag. Director
Ministry of fisheries	Director, PPME
Fisheries Commission	Monitoring and Surveillance (MCS)
Veterinary Services Directorate	Ag. Director
Cattle Breeders and Traders Association, Turaku Market	General Secretary
Agriculture Engineering Services Directorate	Head, Rural technology Information Unit Technical Officer, AESD Head, Post-harvest Unit
Food and Drugs Authority	Head, Agro products and Biosafety Regulatory Officer Snr Regulatory Officer
Ghana Standards Authority	Head of programmes
Ministry of Trade and Industry	Head, Agribusiness
Peasant Farmers Association of Ghana	Programme Manager
Ghana Agriculture Producers	Chairman
National Food Buffer Stock Company	Director of Operations
Amare Projects	Tilapia Trader, Accra
Ghana Agriculture Input Dealers Association	Executive Secretary

A1b. Commodity Groups and Participants in Focus Group Discussions

Type of Groups	Number of participants in Focus Groups
Sheep and Goat Traders (Bolgatanga)	5
Sheep and Goat Farmers (Bolgatanga)	5
Fish Farmers (Navrongo)	3
Fish Traders (Navrongo)	4
Tomato Farmers (Bolgatanga)	5
Tomato Traders (Bolgatanga)	4
Rice Farmers (Tamale)	5
Rice Traders (Tamale)	4
Total No. of Participants	**35**

A2. Mandates of Public Sector Regulatory Institutions

Ministry	Departments/Agencies/Authorities	Regulatory areas
Ministry of Food and Agriculture	Plant Protection and Regulatory Services Directorate	Organizes, regulates, implements and coordinates the plant protection services i. Sanitary & Phytosanitary safety ii. Pesticide use iii. Seed sector development
	Veterinary Services Directorate	The activities relevant to marketing are: i. Ensures that meat and other products of animal origin are safe for human consumption ii. Helps to regulate imports of meat and animal products by ensuring that such products come from countries certified by the OIE to be disease-free. iii. Monitors and enforces regulations on import and export of livestock and poultry and their products, through quarantines, and permits for imports and internal movement and seizure of animals imported in contravention of the law.
Ministry of Fisheries and Aquaculture Development	Fisheries Commission PME of MoFAD	i. Fish health ii. Fish market infrastructure iii. Sustainable aquaculture/fish farming iv. Sustainability of fishery resource v. Ensure IUU compliance: registration of vessels; permits for fishing, imports and exports vi. Enforcement with the marine police and local law enforcement
Ministry of Health	Food and Drugs Authority	Regulates all aspects of Food Safety
Ministry of Science and Technology	Environmental Protection Agency	Competent National Agency charged with the responsibility for regulating the procurement, importation, storage, sales, distribution, disposal and application of all pesticides or plant protection products in a matter that they do not harm the environment, pose health hazard and safety risk to human beings, crops, animals, plant and fish products for consumption. This includes: i. Pesticide registration & licensing ii. Inspection & monitoring of (agro)chemicals iii. Management of hazardous chemical waste disposal and obsolete (agro)chemicals iv. Post registration enforcement Analysis of pesticides
	Food Research Institute	Advise Government on national food Policy • Support the food and agricultural sectors • Conduct applied research into problems of: i. Food processing, preservation and utilization ii. Storage, marketing and distribution

		iii. Food safety & quality assurance iv. National food and nutrition security v. Support micro, small, medium & large-scale industrial food processing
Ministry of Local Government and Rural Development	Metropolitan, Municipal and District Assemblies	i. Make provision for the inspection of all meat, fish, vegetables and all other foodstuffs intended for human consumption whether exposed for sale or not. ii. Seize, destroy and otherwise deal with all such foodstuffs or liquids as are unfit for human consumption. iii. Supervision and control of the manufacture of foodstuffs and liquids intended for human consumption. iv. Provide, maintain, supervise and control slaughter-houses

Source: Developed by Author based on relevant public documents

A3. Public Sector Facilitating Institutions and Mandates

Ministry	Departments/Agencies/ Authorities	Regulatory areas and functions
Ministry of Food and Agriculture	Statistics Research and Information Directorate – Market Services Unit	Collect, collate and disseminate market information
	Directorate of Agricultural Extension Services	Transfer technology and good agricultural practices to farmers
	Crop Services Directorate	Mandate is to promote the production and facilitate the processing, distribution and marketing of food, industrial and export crops; i. Responsible for the development of the Green label – good agricultural practice development for fruit & vegetables, including development of standard operating practices (SOPs)Development of Ghana Green label
	Agricultural Engineering Services - Post-harvest Unit	i. Develop and introduce technologies for post-harvest management (storage, dryers, processing equipment) ii. Backstop Agriculture directorates of Local Government Service
	Women in Agricultural Development	Promote i. Nutrition improvement ii. Food safety along the agricultural value chain iii. Value addition to agriculture produce
Ministry of Fisheries and	Aquaculture Development Fisheries Commission PME of MoFAD	Streamline the fish market to facilitate traceability for access to export market Focus is on Fish health and sanitation through provision of infrastructure for fish processing and marketing Specific provisions in Fisheries Regulations, 2010 (LI 1968) i. Use of chemical ii. Minimum sanitary requirements iii. Inspection of sanitary conditions of landing sites iv. Importation of fish and fish products
	Fisheries Commission	Illegal, Unreported Unregulated fishing
Ministry of Trade and Industry		Mandate of Trade and Industry is to facilitate of domestic trade. i. MOTI's mandate starts after harvest and into processing and marketing. ii. Mandate covers transportation, packaging, standard measures, and grades, and policy MoTI has been involved in the following marketing issues: i. Grading, ensure quality, traceability, use of chemical (approved chemicals, proper application and maximum residual levels). ii. Resolution of disputes among traders iii. Building of model markets
Ministry of Trade and Industry	Ghana Standards Authority	Competent Authority for standards and method development, testing and analysis

		i. Demand-driven analysis of all products, both non-food and foods products, including fresh fruits, vegetables and their processed products covering domestic, exports and imports ii. Conducts pesticide, microbiological, heavy metals, histamine and mycotoxin analysis on food and food products on client own samples delivered to the Authority Conformity assessment tasks include: i. Certification services ii. Inspection services iii. Laboratory services iv. Testing and calibration of equipment. GSA does not regulate; conducts post registration and market surveillance
	Ghana Exports Promotion Authority	i. Market Access, Development and Penetration Programs. ii. Product Development and Supply Base Expansion iii. Export Trade Information Dissemination and Communication
	Ghana Export Trade Information Centre	i. Provides product and market information, including trade events and topical issues to the business community or refers exports to other important sources of information ii. Assists exporters who deal in food export to register their food facilities as well as products intended for the USA as required under the Bio-Terrorism Act of 2002.

Source: Developed by Author based on relevant public documents

A4. Private Sector and DP facilitators

Organisation	Functions
Ghana Grains Council	The mandate of the GGC is to enhance the efficiency of grain crop value chains through the provision of a variety of services. The areas of focus are: i. Warehouse receipts programme, ii. Policy and advocacy (grains standards development, warehouse receipts bill, fertilizer act and revision of old standards in rice) iii. Training and capacity building of actors in the grains value chain to better enable them compete in the grains sector. iv. Market and trade development initiatives. v. Support services including, market information, publications, business advisory services and market access services, posters for pictorial education, and radio programmes in local languages. vi. Promoting trade by weight and grades in a more structured market – through institutional buyers, at certified warehouses vii. GSA standards have been adopted to ensure food safety and quality.
Esoko Other e-based MIS providers are Pre-eez, Farmerline, VOTO	Esoko is a market information provider. i. Esoko collects, collates and disseminates market information including, wholesale and retail prices, good agricultural practices, and weather. ii. It disseminates information through selected media houses and on radio iii. Information is available on demand through subscription to the Esoko platform or call centre. Producers can also access information by subscribing to SMS alerts. Prep-eez provides e-extension. It facilitates knowledge sharing among actors through the entire agricultural value chain through without limits to language, literacy, distance and affordability.
Cattle Breeders and Traders Association	i. Advocacy organization; mediates in disputes and is link between members and policy makers ii. Moderates transactions between traders and buyers via middlemen, also known as landlords. iii. Educates members on government and international policies[33] Costs of services provided to members are covered from the registration and monthly dues. So Association sometimes looks for funding to carry out their activities.
Ghana Association of Vegetable Exporters (GAVEX);	Advocate for compliance with quality standards among members Self-regulation (e.g. voluntary ban on exports of vegetables) Investments in technical expertise to train extension agents and outgrower Organise trade missions to understand and appreciate nature of inspections of vegetables in the UK Provides information on quality standards, policy to members.
Vegetable Producers and Exporters of Ghana (VEPEAG)	Advocates on behalf of members Serves as link between members and public institutions through membership on important committees (e.g. Standards Committee).
National Food Buffer Stock Company (NAFCO)	A semi-autonomous organization under MoFA, with the mandate to: i. Mop up excess cereals in the market

[33] See section 3.6 for details on trade associations

	ii. Buy produce at minimum guaranteed prices iii. Provide assured market to farmers iv. Reduce post-harvest losses v. Hold emergency stocks vi. Supply food to government institutions (school feeding, hospitals, prisons etc.) vii. Employ buffer stock mechanism in regulating prices. Target commodities are maize, rice (paddy and milled), soybean, sorghum and millet. Although the target groups are farmers, NAFCO has stopped purchasing produce directly from farmers because of poor quality. NAFCO procures grain quality grain through produce buying companies at a commission. Basic farm gate price is determined through a committee as cost plus 10 percent margin
Ghana Agricultural Producers and Traders Organisation	GAPTO is a pressure group that advocates for members on marketing issues Association serves as information centre for traders. Members have received training on financial management, record keeping, advocacy, dispute resolution through projects such as MISTOWA, TIPCEE.
World Food Program	Goals of WFP: reduce post-harvest losses, improve food storage and safety, market infrastructure and link smallholder farmers to quality markets. WFP works with farmer organisations to produce quality produce which the organization procures for its school feeding programme. The organisation has provided: i. Trainings on business management, GAPs, etc on production of quality produce ii. Farmer organizations have been provided with tools on a cost-sharing basis to manage quality (e.g. blue boxes for testing for aflatoxin and moisture levels). iii. Successfully introduced use of weighing scales by farmer organisations in collaboration with the Ejura District Assembly. This demonstrates a potential to successfully promote weights and measures in other districts.
CABI	Phytosanitary system development for vegetables Project, 2015 – 2019 Work with existing SPS system to develop Ghana's technical and organizational capacity for core phytosanitary competencies related to export.

Source: Developed by Author based on relevant public documents

A5. Laws Affecting Agricultural Marketing

Regulatory Institution	Legal framework	Administrative measures	Ease of Enforcement
Buying and selling Contracts	Sale of Goods Act, 1962 (Act 137) (Cordero-Salas et al., 2015 Contracts Act, 1960 (Act 25)	Act applies to every contract of sale of goods but it does not say whether contract is formal or informal.	Unable to assess
Plant Protection and Phytosanitary services	Plants and Fertilizer Act, 2010 (Act 803). Environmental Protection Agency responsible for Pesticide Control and Management Act, 1996, Act 528. Its functions i. Pesticide registration & licensing ii. Inspection & monitoring of (agro)chemicals iii. Management of hazardous chemical waste disposal and iv. obsolete (agro)chemicals v. Post registration enforcement vi. Analysis of pesticides	Four Divisions: Plant Quarantine Crop Pests and Disease Management Seed Inspection and Certification Pesticides and Fertilizer Regulation (only fertilizer is mentioned under the regulations Sections 106 – 114) Regulations: i. Plant Protection and Regulation LI 2910 ii. C/REG. 4/05/2008 on harmonisation of the rules governing quality control, certification and marketing of plant seeds and seedlings in the ECOWAS Region iii. Regulation C/REG.13/12/12 Relating to fertilizer quality control. The Environmental Protection Agency manages pesticide imports and distribution	Awareness of the laws is low and compliance varies, being high for exports and very low for domestic production. Monitoring is limited by funding otherwise it is easy to enforce laws because of the licensing requirements binds stakeholders to do the right thing. Structure for official quality assurance is in place; e.g. post-certification surveillance is working. Clients pay for services but the charges are low. Also, the 20 percent retention of charges by PPRSD is too low to cover costs of services. PPRSD leads in licensing and inspections; GSA and FDA conduct pesticide and aflatoxin tests respectively for export clients
Animal health	Animals (Control of Importation) Act, 1952, Act 36 Animal Diseases Act, 1961 Act 83	Regional Veterinary officers enforce laws Veterinary services at border posts and livestock markets i. Link with the OIE to verify that animals and meat imported meet international standards. ii. Inspect and issue permit for importation of animals	The VSD gives a positive assessment about the awareness of the laws among the general public, traders and public institutions. VSD collaborates with FDA for meat inspection. Monitoring capacity is weak because of few numbers of veterinary officers. Paravets could support the vet officers

		iii. Issues permits for movement of animals in country iv. Certifies health of animals before slaughter v. Records data on livestock imports, meat imports and animals slaughtered	in monitoring but they not being utilized. Preparation of new regulations is underway to upgrade to WHO & CODEX standards (Modified Act 1961) VSD does not have adequate places to hold livestock internally for inspections and permitting for movement[34]. VSD leads; collaborates with FDA, MoH, GHS, Environmental Health departments of the MMDA
Food Safety	Public health Act 851, 2012 Local Government Act, 1993, Act 462 Section 10, subsection 3, items c and d state: the district; c) shall promote and support productive activity and social development in the district and remove any obstacles to initiative and development; d) shall initiate programmes for the development of basic infrastructure and provide municipal works and services in the district;	1. Set up of the Food Safety Division comprised of Animal Products and Biosafety Department (APBD), the Food Safety Management Department (FSMD) and the Food Industrial Support Services Department (FISSD). 2. The Import and Export Control Department (IECD) of the Food and Drugs Authority is mandated to regulate the importation and exportation of food. 3. Registration, certification, inspections and post market surveillance used to enforce the law. 4. Sanitation in slaughter houses and transportation of meat 5. Food Safety Policy 6. Food Safety Strategic Plan Assemblies set up Development and Planning Sub-committee of the Executive Committee	Awareness of the Food Safety law is high among the general public and industry players. This is evidenced by increasing complaints from the public and increased registrations and requests for supervision. The level of compliance with the law is high because of the high awareness and implications for noncompliance. The laws are also effective in achieving their objective because 90percent of areas to covered are compliant. Amendments and new regulations may be necessary as new issues emerge. Capacity of FDA for agro-produce safety is low; tracing produce is difficult or impossible; testing of products is expensive and concentrated in Accra. Socio-cultural factors limit compliance (e.g. butchers need to trained on sanitation and meat hygiene) FDA leads and collaborates with MoFA (VSD, CSD, APD), GSA, EPA, Police, CSIR, Universities, and MMDAs
Fishing (Fisheries sustainability and Fish health)	Fisheries Act, 2002. Act 625	1. Establishes the Fisheries Commission to regulate and manage the utilization of the and coordinate the policies in relation to them.	Awareness of fisheries laws among general public is low but is better among marketers.

[34] Discussion with the Executive Secretary, LBTA, Ashaiman livestock market

	Fisheries Regulation, 2010 (L.I.1968) with Aquaculture regulations Fisheries (Amendment) Act 880 (2014) & Regulations (2015), LI 2217	2. Registration, declarations, inspection, certification by MCS and permitting by the Minister 3. AQUACULTURE REGULATIONS OF GHANA LI 1968 OF 2010 Undesirable aquaculture practices are prohibited to ensure safety of food fish; prohibits addition of harmful substances or organisms to facilities; use of chemicals or drugs in aquaculture shall be in accordance with the Environmental Protection Agency Act, 1990, (Act 490). Permits needed for the importation and exportation of fish. Health certificate needed for imports; A fish inspector from a competent authority shall inspect fish landings for their quality and status at landing sites.	The laws are not easy to enforce and therefore they are not effective in achieving their objective. Although there is no need for additional regulations, staff of MoFAD think there is need to harmonise institutional arrangements for the law. Roles of Fisheries and FDA in terms of fish health need to be harmonized. A new fisheries law is being developed. MoFAD and Fisheries Commission lead; collaborators are Marine Police, MMDAs, Water Resources.
Standards (Quality, grades) and Weights and Measures	Standards Authority Act, 1973 (N.R.C.D. 173) Standards Board (Amendment) Decree, 1979 (A.F.R.C.D. 44); Weights and Measures Decree, 1975 (N.R.C.D. 326)	No LI for NRCD, 326 1975	Awareness of laws on standards is very low therefore the level of compliance is also low. Monitoring is not adequate and enforcement is not easy because of financial limitations and cultural limitations. Otherwise existing GSA law is adequate to achieve the objectives of standardization. There is need for regulations to support the Decree on Weights and measures so that they can be enforced. GSA is custodian of NRCD 326 but it has limited enforcement powers (not a regulator) therefore there is a gap on who should enforce the use of Standard weights and measures Same with grading of produce to standards developed by the authority. Compliance is engendered by demand for those standards as is the case in export marketing and trading with formal institutions and processors. GSA leads and collaborates with all regulators and organisations wanting to introduce standards for their sector.

Market infrastructure	Local Government Act, 1993 (Act 462) The laws regarding agricultural trade in the assemblies are the general national and international agricultural trade laws (sanitary and phytosanitary laws, veterinary laws and food safety laws regarding slaughter of animals)	Establishment of Metropolitan/Municipal/District Environmental Department and Environment Committees	Instruments for Assemblies	The DA Common Fund is the main source of revenue for Metropolitan, Municipal. Revnue from market tolls and other taxes are reliable source of revenue but not enough for the assemblies to provide services to traders. No structure for the enforcement of safety standards for agricultural produce in markets
Financing	Export Development and Agricultural Investment Fund (Act 823 (2011) Export Trade, Agriculture and Industrial Development Fund Bill, 2013			

A6. SWOT of Marketing System

Strengths	Weaknesses
i. Well organized trader groups ii. Non-interference of the state in marketing in price setting or product flows iii. Existence of a system of grading and standards for use by traders, and spatial market integration. iv. traders are entrepreneurial v. Trader groups advocate for members vi. Well educated agricultural commodity exporters are aware and willing to self-regulate their members enforce standards	i. High level of informality ii. Prevalence of face to face trading and associated high transactions costs; iii. Challenges of facilitating and regulating the highly informal system iv. Therefore services to internal marketing are few (strong on dissemination of market prices) v. Imbalance in market power between traders and farmers vi. Collusion by traders vii. Aversion to use of standard weight and measures viii. Low price incentive and unwillingness to invest in quality ix. Inability of farmers to use higher level of ICT tools to access information. x. High cost of accessing market information xi. Practices in domestic market pose threat to food safety, yet low awareness about food safety risks xii. Ignorance of majority of market actors about aflatoxin and its effects on human health
Opportunities	**Threats**
i. Growing demand for food ii. Increasing demand for processed food items iii. Growing middle class needing quality produce who are more willing to pay for quality iv. Growing demand from agro-industry v. Rising demand for processed food items will shift market shares toward the industrialised food sector vi. Linkage arrangements between farmers on one hand, and nucleus farmers, formal aggregators, agro-processors growing and institutional buyers vii. Emergence of commercial market information service providers viii. Use of ICT for market information ix. Development of Ghana Green label and standards for some agricultural commodities. x. Public market information service providers hinged on ICT and mobile technology xi. Efforts of GGC to modernize the market (warehousing, warehouse receipt system	i. Poor road infrastructure ii. High costs of transport off-trunk roads iii. Rising standards on international markets especially for horticultural produce (gaps, ethical standards and carbon footprints) xiii. Capital to expand farming and trading is not available iv. No insurance for traders

A7. SWOT of Regulatory Environment

Strengths	Weaknesses
i. High technical capacity of existing staff ii. Existing laws are appropriate for addressing issues of standard and quality iii. Many of the laws have well laid out systems for their enforcement iv. Awareness of laws among traders is high (perceptions of regulatory institutions) v. Well educated agricultural commodity exporters are aware and willing to self-regulate their members enforce standards	i. Low financial capacity to monitor or conduct market surveillance ii. Laws are enforced through registrations and threats of withdrawal licenses iii. Enforcement is by multiple agencies creates room for enforcement system to be compromised (in marine fisheries, Fisheries Commission, fishing communities and Marine Police) iv. MSU is only a price collation division with limited engagement with the internal marketing system v. Role of FDA as a food safety regulator extends its activities across the food system and can create duplication of efforts and possible conflicts with mandates of other organisations (e.g. aflatoxin is an SPS issue under PPRSD but a also a food safety issue. What are the scopes of mandates of FDA and PPRSD? vi. Concentration of testing laboratories in the national capital limits access to testing services and constrains wider adoption of standards vii. Cost of testing also high partly because of concentration of the services. viii. Awareness of relevant laws (weights and measures, food safety, pesticide, animal diseases/animal health) is low among the small FBO and trader organisations research team interacted with in the Upper East region
Opportunities	**Threats**
i. Interest of DPs and international market facilitators in addressing food safety issues and in raising food safety standard ii. Compliance with food safety and ethical standards a requirement for accessing international markets **iii.** At least one project to build technical capacity of regulatory institutions (CABI)	i. Negative attitudes of farmers and traders in quality assurance ii. Unwillingness of traders in internal markets to adopt standard weights and measures iii. Consumers not demanding standards (weights and measures and quality) iv. Cuts in budget to MoFA v. Freeze on employment in public sector

A8. SWOT of Farmer and Trader Organisations

Strengths	Weaknesses
i. Export trader associations are well-informed ii. Awareness of laws among external traders is high (perceptions of regulatory institutions) iii. Well educated agricultural commodity exporters are aware and willing to self-regulate their members enforce standards iv. Trade associations (internal and export) can advocate for members v. Associations can contribute to policy dialogue with state organisations	i. Smaller organisations (farmer and trader) tend to focus on welfare of members and so pay little attention to their livelihood activities ii. Multiple registrations required of agricultural export traders iii. Internal trader organisations are inward looking – actions limit competition iv. Awareness of relevant laws (weights and measures, food safety, pesticide, animal diseases/animal health) is low among the small FBOs and trader organisations
Opportunities	**Threats**
i. Increasing awareness of consumers for quality produce ii. Interventions to develop structured markets inclusive of smallholders (e.g. Ghana Grains Council)	i. Unwillingness of middlemen to use standard weights and measures ii. Poor market infrastructure, especially for holding perishable produce

A9. Summary of Interviews with Farmer and Trader Groups

Commodity	Scale of production	Price determination	Challenges
Tomato (Asungtaaba Tomato Farmers Association). 20+ members. Welfare support and price negotiation for members	60 – 80 crates (52Kg) per season	Sell to local and distant wholesalers Prices set through negotiation. Producers have no power in times of glut	No storage facilities in markets Inadequate capital for production Low prices Competition from foreign tomato producers (Burkina Faso)
Sheep and goats Farmers not organised in group	Sell in Bolgatanga market or by roadside	Prices determined by negotiation	Low financing Livestock diseases
Fish A single producer in Navrongo	270,000 kg/year (about 90,000kg in 2 batches	Sell on farm to wholesalers and retailers, and to local restaurants and hotels Prices are negotiated but bargaining powers of producer and buyers changes depending on availability of fish	Difficult to produce big fish desired by buyers Competition from Burkina Faso Lack of storage facilities High cost of feed
Rice Kpangmankawonson FBO in Kpalahi near tamale FBO assists members to access inputs and credit	Average of 3 acres/farmer 45 bags (4.5 tons/year)	Do not sell all at harvest. Store for about 4 months. Prices are negotiated and farmers have stronger bargaining power in the lean season Farmers sell independently	High production cost Low prices No credit facilities Poor roads

A10. Summary of Interviews with Traders

Commodity	Scale of trade	Price determination	Relationships between actors	Challenges
Tomatoes Asongtaba Tomato Traders Association, Bolgatanga	3 buckets/week 1.5 non market days Source produce from different sources Dec – Feb (Vea and Tono) Other periods, Techiman and Burkina Faso Farmers transport produce to market	Sell in Bolga market Traders set prices	No contracts with farmers Wholesalers may sell on credit to retailers	Losses in storage Limited market space Poor structures No storage facilities No credit Supply shortage during the off-season
Sheep and goats	Sell 9 – 15 sheep/market day and 20 goats Buy from nearby villages and Burkina Faso Peak sales during Christmas and Easter	Sell in Bolgatanga market Prices are negotiated	No contracts No pre-financing	High cost of transport Poor market infrastructure Limited market space Theft limited finance for expansion No support from Municipal Authorities
Fish Dewolidane Fish traders Association, Navrongo. About 3 members	60 – 90Kg/day Traders buy from Tono fish farmer, and from Yejji and Burkina Faso	Sell in Navrongo market. Shed provided by Member of Parliament Sell to consumers and local retailers from Bolgatanga	Traders may finance nets for fishers Trade credit from farmers/fishers Traders bear all marketing costs	Irregular supply Financial constraints No loan facilities
Rice Individual traders in Tamale Market	Wholesalers – 800Kg/day Retailers – 100Kg/day All trading in Tamale market. Aggregators buy paddy from farmers and sell to wholesalers who mill.	Uniform price of rice in market. Cost plus approach	No contracts or other engagements between traders	No shed for retailers Limited market space High transportation costs