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**UTILIZING VALUE CHAIN ANALYSIS TO UNDERSTAND THE
CHALLENGES OF TOMATO FARMERS IN GHANA:
A CASE STUDY OF MATSEKOPE**

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ACADEMIC DISSERTATION

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ABSTRACT

The **first objective** of this dissertation is to identify and analyze the challenges encountered by Ghanaian tomato farmers when they cultivate and sell their crop. Set within the context of low, national productivity in the tomato sector, this dissertation focuses on a case study of the village of Matsekope, located in one of the three main tomato-producing regions in Ghana. Both the cultivation and selling processes are analyzed because they are interlinked - tomatoes are cultivated in order to be sold, while markets provide the incentive for and possibly influence cultivation practices.

This research utilizes value chain analysis (VCA) - input, output, geographical destination, governance and institutions - since it allows for a detailed study about the development of a commodity from the initial stages of production or cultivation to the eventual sale on the market. By utilizing VCA, this research also addresses a **second objective**, which is to contribute to the current debate concerning the parameters of VCA research. In other words, to see if every process and actor from input to the end-use product ought to be included in VCA, or if rather only specific segments and actors along the chain can be analyzed.

While information on input, output and the geographical destination of tomatoes proved to be integral parts to this value chain, the governance and institutions portion of the analysis (utilizing the Kaplinsky and Morris model) was key to obtaining a better understanding about how and why the value chain was operating as it was, and more specifically why farmers were encountering certain challenges. These challenges were namely obtaining access to credit, farming irrigation, input supply (tractor services) and improved cultivation practices, as well as difficult price negotiations with traders, limited access to markets, and price fluctuation throughout the season. The overall picture that evolved was a complex set of relationships between actors and their respective rules or legislation. In addition, utilization of VCA in this research also demonstrated that it can be used as an

analytical framework to focus on a specific segment and set of actors within a larger value chain, and that the departing point of analysis does not necessarily have to be the global firm.

Keywords: value chain analysis, governance, Ghana, farmers, tomato sector

TIIVISTELMÄ

Tämän tutkielman ensimmäisenä tavoitteena on tunnistaa ja analysoida Ghanan tomaatinviljelijöiden sadon kasvattamiseen ja myyntiin liittyviä haasteita. Maan tomaatintuotannon tuottavuus on alhainen, ja sitä taustaa vasten tässä tutkielmassa keskitytään Matsekopen kylän tapaustutkimukseen. Kylä sijaitsee yhdellä Ghanan kolmesta suuresta tomaatintuotantoalueesta. Tutkielmassa analysoidaan sekä viljely- että myyntiprosessia, koska ne kytkeytyvät toisiinsa: tomaatteja viljellään myyntiin, ja toisaalta markkinat muodostavat kannustimen viljelykäytännöille ja mahdollisesti myös vaikuttavat niihin.

Tutkimuksessa käytetään arvoketjuanalyysia (VCA) – panos, tuotos, maantieteellinen määränpää, hallintotapa ja instituutiot – sillä tällä menetelmällä saadaan yksityiskohtainen kuva hyödykkeen kehityksestä tuotannon tai viljelyn alkuvaiheista aina sen lopulliseen myyntiin markkinoilla. Arvoketjuanalyysin ansiosta tällä tutkimuksella edistetään myös toista tavoitetta, joka palvelee osaltaan arvoketjuanalyysin tutkimuksen parametreista parhaillaan käytävää keskustelua. Toisin sanoen tarkastellaan sitä, olisiko arvoketjuanalyysiin sisällytettävä jokainen prosessi ja toimija aina panoksesta lopputuotteeseen, vai voidaanko analysoida vain tietyt, ketjuun sijoittuvat segmentit ja toimijat.

Tiedot panoksesta, tuotoksesta ja tomaattien maantieteellisestä määränpäästä osoittautuivat erottamattomaksi osaksi kyseistä arvoketjua, mutta hallintotapaa ja instituutioita koskeva analyysin osuus (käyttäen Kaplinskyn ja Morrisin mallia) avasi tien parempaan ymmärrykseen siitä kuinka ja miksi arvoketju toimi niin kuin se toimi ja etenkin miksi viljelijät kohtasivat juuri niitä haasteita kuin he kohtasivat. Nämä haasteet nimittäin koskivat luotonsaantia, kasteluviljelyä, panosten tarjontaa (traktoripalvelut) ja parempia viljelymenetelmiä sekä kauppiaiden kanssa käytäviä vaikeita hintaneuvotteluja, rajoitettua markkinoille pääsyä ja viljelykauden aikaista hintojen vaihtelua.

Kokonaiskuvaksi jäi monimutkainen suhteiden verkosto toimijoiden ja heitä koskevien sääntöjen ja lainsäädännön välillä. Arvoketjuanalyysin käyttö tässä tutkimuksessa osoitti niin ikään, että analyysi soveltuu pitkähkön arvoketjun yksittäisen segmentin ja toimijajoukon analyttiseksi viitekehyykeksi ja ettei analyysin lähtökohtana tarvitse välttämättä olla maailmanlaajuisesti toimiva yhtiö.

Asiasanat: arvoketjuanalyysi, hallintotapa, Ghana, maanviljelijät, tomaattien tuotanto

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ABBREVIATIONS AND ACRONYMS

| | |
|----------|---|
| ACP: | African, Caribbean and Pacific |
| ADB: | Agricultural Development Bank |
| AEA: | Agricultural Extension Agent |
| ALL: | Afrique Link Limited |
| AMA: | Accra Metropolitan Assembly |
| ARSO: | African Organization for Standardization |
| AU: | African Union |
| BSE: | Bovine Spongiform Encephalopathy |
| CAADP: | Comprehensive African Agricultural Development Program |
| CAG: | Consumers Association of Ghana |
| CD: | Capacity Development |
| CERSGIS: | Center for Remote Sensory and Geographic Information Services |
| CI: | Consumer International |
| CIDA: | Canadian International Development Agency |
| COCOBOD: | Ghana Cocoa Board |
| CODEX: | Codex Alimentarius Commission |
| CRIG: | Cocoa Research Institute of Ghana |
| CRI: | Crops Research Institute |
| CSIR: | Council for Scientific and Industrial Research |
| CWSA: | Community Water and Sanitation Agency |
| DA: | District Assembly |
| DACF: | District Assemblies Common Fund |
| DAES: | Division of Agricultural Extension Services |
| DANIDA: | Danish International Development Agency |
| DCE: | District Chief Executive |
| DDA: | Doha Development Agenda |
| DFID: | Department for International Development (U.K.) |
| DFQF: | Duty Free Quota Free |
| DP: | Development Partners |
| ECOWAP: | Regional Agricultural Policy for West Africa |
| ECOWAS: | Economic Community of West African States |
| EPA: | Economic Partnership Agreement |
| EGCI: | Esoko Ghana Commodity Index |
| EMQAP: | Export Marketing and Quality Awareness Project |
| EOI: | Export Oriented Industrialization |

| | |
|----------|---|
| ERP: | Economic Recovery Program |
| EU: | European Union |
| FAO: | Food and Agriculture Organization |
| FASDEP: | Food and Agriculture Sector Development Policy |
| FBO: | Farmer Based Organization |
| FDA: | Food and Drugs Authority |
| FDI: | Foreign Direct Investment |
| FFS: | Farmer Field School |
| GAIDA: | Ghana Agri-Input Dealer Association |
| GAP: | Good Agricultural Practices |
| GASIP: | Ghana Agricultural Sector Investment Program |
| GATT: | General Agreement on Tariffs and Trade |
| GCC: | Global Commodity Chain |
| GIDA: | Ghana Irrigation Development Authority |
| GIPC: | Ghana Investment Promotion Center |
| GIS: | Geographic Information Systems |
| GDP: | Gross Domestic Product |
| GHC: | Ghana Cedi |
| GLAP: | Ghana Land Administration Project |
| GLSS: | Ghana Living Standards Survey |
| GNTTA: | Ghana National Tomato Traders Association |
| GoG: | Government of Ghana |
| GPRS I: | Ghana Poverty Reduction Strategy |
| GPRS II: | Growth and Poverty Reduction Strategy |
| GSA/GSB: | Ghana Standards Authority / Ghana Standards Board |
| GSGDA: | Ghana Shared Growth and Development Agenda |
| GSP: | Generalized System of Preferences |
| GSS: | Ghana Statistical Services |
| GVC: | Global Value Chain |
| HP: | Hunger Project |
| ICOUR: | Irrigation Company of the Upper Region |
| ICT: | Information, Communications and Technology |
| IEC: | International Electro-Technical Commission |
| IEPA: | Interim Economic Partnership Agreement |
| IFAD: | International Fund for Agricultural Development |
| IFDC: | International Fertilizer Development Center |
| IFPRI: | International Food Policy Research Institute |
| IGF: | Internally Generated Funds |
| IMF: | International Monetary Fund |

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|----------|--|
| IPM: | Integrated Pest Management |
| ISO: | International Organization for Standardization |
| ISSP: | Industrial Sector Support Program |
| LI: | Legislative Instrument |
| MDA: | Ministries, Departments and Agencies |
| METASIP: | Medium Term Agriculture Sector Investment Plan |
| MFN: | Most Favored Nation |
| MOFA: | Ministry of Food and Agriculture |
| MOFEP: | Ministry of Finance and Economic Planning |
| MOTI: | Ministry of Trade and Industry |
| MOU: | Memorandum of Understanding |
| NAEP: | National Agricultural Extension Project |
| NDPC: | National Development Policy Commission |
| NEPAD: | New Partnership for Africa's Development |
| NGO: | Non-Governmental Organization |
| NLCD: | National Liberation Council Decree |
| NSTC: | Northern Star Tomato Company |
| PPMED: | Policy, Planning, Monitoring, Evaluation Directorate |
| PPRSD: | Plant Protection and Regulatory Services Directorate |
| PSIA: | Poverty and Social Impact Analysis |
| RAFIP: | Ghana Rural and Agricultural Finance Program |
| ROO: | Rule of Origin |
| R&D: | Research and Development |
| SAP: | Structural Adjustment Program |
| SIS: | Smallholder Irrigation Schemes |
| SRID: | Statistics, Research and Information Directorate |
| SMS: | Subject Matter Specialist |
| SPS: | Sanitary and Phytosanitary Standards |
| TIPCEE: | Trade and Investment Program for Competitive Export Economy |
| T&V: | Training and Visit |
| UNCTAD: | United Nations Conference on Trade and Development |
| UNECE: | United Nations Economic Commission for Europe |
| USAID: | United States Agency for International Development |
| VCA: | Value Chain Analysis |
| WB: | World Bank |
| WHO: | World Health Organization |
| WTO: | World Trade Organization |

INTRODUCTION

Tomatoes are a key agricultural crop for the domestic market in Ghana, largely due to its importance for Ghanaian meals. They are an important feature for Ghanaian cuisine, accounting for an estimated 38 percent of the Ghanaian household vegetable expenses (Agyekum 2015: 7). Tomatoes are used in almost all national dishes from “Red-Red” to “Jollof Rice” and “Gari Foto”, to name just a few. Considering the high importance of tomatoes in the Ghanaian diet, it would be fair to believe that there is a thriving tomato sector in the country. However, this has not been the case. Rather, tomato farming in Ghana suffers from low productivity levels. Analysis of yield statistics from the United Nations Food and Agriculture Organization (FAO) shows that over the past decade tomato productivity levels in Ghana have been between 4.7 to 7.8 tonnes per hectare (FAO 2017b).¹ The most recent available statistics from the FAO on the average national yield for tomatoes in Ghana was 7.8 tonnes per hectare in 2014 (FAO 2017b). The FAO suggests “45-65 tonnes per hectare as a good commercial yield” for tomatoes (FAO 2017a).² Although an important component of Ghanaian cuisine, instead of the existence of a prosperous tomato sector, numerous academic articles and studies, in addition to publications published by Ghana’s Ministry for Food and Agriculture (MOFA), have shown Ghana’s tomato sector to be suffering instead from low productivity (Adu-

¹ All FAO statistics in this dissertation were obtained from the FAO website (FAOSTAT) with full reference given in the References section.

The most recent FAOSTAT statistics available for production quantity and yield for tomatoes in Ghana, are for the year 2014. Text referring to “the past decade” thus refers to the years 2004-2014.

All reference to “tonne” or “tonnes” in this dissertation refers to “metric tonnes”. One tonne being equivalent to 1,000 kilograms. “Crop yield” is the production (in metric tonnes) per unit of land (a hectare).

More information on tomato production quantity and yield in Ghana and all other member countries is available at the FAOSTAT website: <http://www.fao.org/faostat/en/#data>

² Refer to FAO website at: <http://www.fao.org/land-water/databases-and-software/crop-information/tomato/en/>

Dapaah and Oppong-Konadu 2002; Asuming-Brempong and Asuming Boakye 2008; Kufuor 2008; Monney et al. 2009; Robinson and Kolavalli 2010a; Ngeleza and Robinson 2011; World Bank 1991, 2007; World Bank and The International Bank for Reconstruction and Development 2010; MOFA 2010a, 2010g, 2011c, 2013).

Statistical analysis of tomato production in Ghana shows that its tomato yield is low when compared to countries regionally and internationally. Ghana is not only below the FAO recommended level, but it also under-performs in terms of yield when compared to other tomato-producing countries within its regional grouping of ECOWAS (Economic Community of West African States). Ghana is among the region's least productive countries when it comes to tomato yield. Senegal, Liberia and Burkina Faso for example are among the region's countries that have higher tomato yields than Ghana. In 2014 Senegal had a yield of 25.6 tonnes per hectare, Liberia 12.5 tonnes per hectare, and Burkina Faso 9.7 tonnes per hectare (FAO 2017b).³ The difference becomes even greater when Ghana is compared to some of the top tomato-producing countries in the world, such as China, the United States, and Turkey. Not only do these latter three countries produce high quantities of tomatoes, with the most recent figures placing China at the top of the international list with the production of 52.5 million tonnes of tomatoes in 2014, but they also have yields hovering near or exceeding the FAO recommendation (FAO 2017b).⁴ Tomato yield statistics for China, the United States and Turkey in 2014 were 52.7 tonnes per hectare, 88.8 tonnes per hectare, and 37.1 tonnes per hectare respectively (FAO 2017b).⁵

³ Refer to FAO website at: <http://www.fao.org/faostat/en/#data>. According to FAO statistics, in 2014 within the ECOWAS region only Nigeria and Togo produced lower tomato yields than Ghana. The FAO does not have data though on Gambia, Guinea or Guinea Bissau.

⁴ Refer to FAO website at: <http://www.fao.org/faostat/en/#data>. All statistics concerning "China" in this thesis refer to "mainland China" – i.e. not including the Special Administrative Regions of Hong Kong and Macau, nor Taiwan.

⁵ Refer to FAO website at: <http://www.fao.org/faostat/en/#data>.

Why does the tomato sector in Ghana suffer from low productivity? Are certain cultivation practices at fault? Or is it market constraints? In order to answer these questions, the **first objective** of this dissertation is to identify and analyze the challenges encountered by Ghanaian tomato farmers when they cultivate and sell their crop. Although cultivation procedures provide a direct link to productivity, both the cultivation and selling processes must be analyzed because tomatoes are not cultivated without a purpose. They are cultivated in order to be sold, with viable markets providing the incentive for and possibly influencing cultivation practices. Identifying the cultivation and selling challenges can be rather straightforward in the sense that farmers may directly be asked to identify them. However, this dissertation does not only seek to identify the challenges, but to also provide an analysis of them and thereby better understand why they exist. Understanding *what* the challenges are and *why* they are in existence provides insight about the status quo regarding tomato production in Ghana. The research utilizes the value chain approach (covering the areas of input, output, geographical destination, governance and institutions) since it can provide poignant insight about the sector starting from the initial stages of cultivation to the sale of the tomato.

Historically, at a global level the traditional role of agriculture has been multifaceted, from providing food security, to raw materials for industry, employment, and foreign exchange earnings. Agriculture is often the backbone of a developing country's economy. According to the latest Ghana Living Standards Survey (GLSS) of 2012-2013, 52 percent of households in Ghana own or operate a farm, engaging 83 percent of rural households (MOFA 2015: 56).⁶ Nearly 90 percent

⁶ GLSS is a nationwide household survey conducted by the Government of Ghana to generate information on living conditions in Ghana. Data is obtained on a variety of issues such as education, health, employment, demographics, and migration, to name a few. The first such survey took place in 1987, followed by surveys in 1988, 1991-1992, 1998-1999, and 2005-2006. The most recent is the 6th GLSS, conducted from 2012-2013 with the results published in 2014.

of those farms are smallholder, family-operated entities (MOFA 2011c: 5).⁷ Although the economy in Ghana is changing with the services sector becoming more prominent, at the national level agriculture is still key. It accounts for 22 percent of the country's overall Gross Domestic Product (GDP) (MOFA 2015: 20). How to further develop the agricultural sector of developing countries such as Ghana within the context of an increasingly integrated global economy, continues to be the topic of much debate amongst academics, policy-makers, and institutional organizations (Kalecki 1976; Bardhan 2004a; Dorward 2004; Timmer 2005; Stiglitz 2007; Gibbon and Ponte 2005).

Public sector support for agriculture in Ghana has been largely influenced by the era of de-regulation and trade liberalization prevalent in the Structural Adjustment Programs (SAPs) implemented in the '80s and '90s. The programs required borrowing countries to implement measures aimed at a vast array of sectors in order to promote a more stable financial and economic environment. The focus on market liberalization continues to dominate even today via the various free trade agreements in place globally, such as the Economic Partnership Agreements (EPAs) being negotiated between Europe (European Communities) and the African, Caribbean and Pacific (ACP) states. Although the original aim of the SAPs may indeed have been to create the necessary environment to enable a government to repay foreign debt, SAPs set stringent rules and conditions for borrowers as a precondition for debt relief (i.e. loans) (Hilson 2004: 54). Advocates of the SAPs argue that the policy prevented countries from economic collapse. Critics argue that despite achieving macroeconomic achievements, the process has marginalized the most impoverished groups, debilitating local industry (including manufacturing and processing) of much-need support, causing loss of employment (Tsikata 2001;

⁷ Similar to the definition provided by the Ghanaian Ministry of Food and Agriculture, (MOFA 2011c: 5), "smallholder" in this thesis refers to farms that are less than 2 hectares or 4.9 acres in size.

Hilson 2004).⁸ The focus was to a large extent then, and still is today, on integrating into the international trading system via liberalization and the export market potential.

The debate has though shifted in the last two decades to understanding the commodity specific dynamics, also known as the Value Chain Analysis (VCA) approach. In an era of increasing international transactions, the value chain system of analysis focuses now largely on the global dimension of industrial commodities. However, it has also been used in the agricultural sector for various case studies ranging from fresh fruit and vegetables to more processed items such as tea and coffee (Talbot 2009; Neilson and Pritchard 2009). Value chain analysis is a “framework for understanding how inputs and services are brought together, in order to grow, transform, or manufacture a product, and how that product then moves physically from the producer to the customer” (Webber and Labaste 2010: 1).

Value chain analysis varies in how it is conducted (Korzeniewicz 1994; Barrientos 2001; Humphrey and Schmitz 2002; Gibbon 2003; Bair 2009; Neilson and Pritchard 2009; Musasa et al. 2015). How it is conducted is influenced by the purpose and scale of the analysis. While literature review on the topic demonstrates that most of the attention in value chain analysis has been placed on inter-firm relationships, there has also been increasing debate about expanding it to include the implications for workers - or in the agricultural sector, producers / farmers (Raworth and Kidder 2009; Fromm and Dubon 2006; Royal Tropical Institute et. al 2006). Analysis that includes implications for farmers can provide valuable insight into how an agricultural value chain is affecting what in some cases are the poorest and most vulnerable portions of a population (Raworth and Kidder 2009). Some researchers take the approach that every process and transaction from input to the consumer

⁸ For further discussion on the effects of SAPs refer also to Tsikata (2001); Kohr and Hormeku (2006); Nayyar (2006); and Shafaeddin (2000).

end-product should be included in the analysis, whereas other researchers select specific segments and actors along the chain to analyze (Gereffi and Korzeniewicz 1994; Korzeniewicz 1994; Barrientos 2001; Humphrey and Schmitz 2002; Bolwig et al. 2008; Sturgeon 2009). All add to the broader debate about the scale and purpose of such research and how VCA can be utilized as an analytical construct.

In this dissertation, focus is placed on a segment of the entire tomato value chain in Matsekope - the farmer and the challenges that he or she encounters during cultivation up to the selling stage. By utilizing value chain analysis to uncover and analyze what the challenges are for tomato farmers, this research thereby also addresses a **second objective**: to contribute to the current debate concerning what the parameters of VCA research ought to be - where it should start and end - and importantly, if it can still be used as an analytical framework when the departing point for analysis is a specific segment along the chain focusing on the local farmer rather than an international firm.

Set against the backdrop of three main tomato-producing regions in Ghana, this thesis focuses on a village in one of those regions. It is a localized case study of Ghanaian tomato farmers in the village of Matsekope. Matsekope is located in the Dangme East District of the Ada Plains outside the capital city of Accra. Located in one of the main tomato-producing regions in Ghana and having tomato farmers that are characteristic of agricultural farming in the country (i.e. predominantly smallholder farming), Matsekope was a prime candidate for study and analysis. Although research for this thesis has been conducted in all three main tomato-farming regions (Upper East, Brong Ahafo and Greater Accra) during specific time periods in 2009, 2010 and 2011, this dissertation mainly utilizes the information and data obtained from interviews in Matsekope and the Greater Accra Region.⁹

⁹ More information on specific time periods of field research can be found in chapter three ("Methods").

The chapters that follow seek to illustrate how a value chain approach can be utilized in order to identify, analyze and therefore better understand the challenges of Matseko tomato farmers. Chapter 1 provides a more thorough explanation of the evolution of the value chain analysis and a literature review of key themes that are currently under discussion among academics and practitioners. Chapter 2 provides the international, regional and national context within which farmers must operate. International and regional trade, agricultural framework agreements, as well as Ghanaian national programs that have a direct effect upon the agriculture sector are discussed. Chapter 3 explains why VCA and a single case study was chosen, and how research took place – how data collection, data analysis, and quality of research were maintained throughout the process. The fourth chapter gives an overview of the tomato sector in Ghana, highlighting the state of play in the three main tomato-producing regions in the country. Chapter 5 discusses the input and output figures of tomato farming in Matseko and the geographic destination of the commodity. The chapter covers the first two segments of Gereffi's value chain analysis framework. Chapter 6, in accordance to the Gereffi model, analyzes whether the tomato sector in Matseko can be classified as a producer or buyer-driven value chain, while chapter 7 diverges from the Gereffi model and applies a different form of governance analysis to the tomato value chain – that of Morris and Kaplinsky – to determine if it can tell us more about farmers' challenges. The final chapter summarizes the conclusions of the research. It is my hope that this research first and foremost provides for the identification of and better understanding about the challenges faced by tomato farmers in Matseko. Such evidence may shed light on what aspects of domestic tomato farming and marketing need to be addressed, while also contributing to the current debate about the parameters of value chain research.

CHAPTER 1: THE VALUE CHAIN ANALYSIS FRAMEWORK

This chapter will discuss the history and progression of value chain analysis. From the initial terminology of “commodity chain” utilized in 1977, to its evolution into the terminology “value chain” and the first book-length manuscript on the subject by Gereffi and Korzeniewicz in 1994, to the more current day approaches to VCA. What has emerged over the past several decades is a plethora of research on the subject – particularly on the governance component. One of the more recent governance approaches that this dissertation will delve into in more detail is that of Kaplinsky and Morris (2002). Their approach allows for multiple forms of governance to be present in a single value chain, thereby exposing various policies and interactions among actors.

1.1: THE NUTS AND BOLTS OF VCA

The terminology “value chain” actually entered the lexicon of commodity chain analysis back in 1985 with Michael Porter’s book “Competitive Advantage”. Porter referred to “value chain” to analyze how the *internal* relationships between various actors in a firm can be better managed so that it creates more “value” for the firm’s customers (Bair 2009). Porter was concerned with how one firm could secure a competitive advantage over another firm – in essence how the production process could be broken down into specific segments or linkages in order to find new ways to improve production and profit. It was terminology used for linkages within a firm, and not rather as it is utilized currently to describe backward and forward linkages *outside* of the firm. To better understand how the terminology “value chain” has today become synonymous with commodity activities that are conducted outside the firm, a vital starting point is the work of Hopkins and Wallerstein.

The term “commodity chain” dates from a 1977 article written by Terence Hopkins and Immanuel Wallerstein, entitled “Patterns of development of the modern world-

system”, in which the authors define the terminology as follows: “Take an ultimate consumable item and trace back the set of inputs that culminated in this item – the prior transformations, the raw materials, the transportation mechanisms, the labor...” (Hopkins and Wallerstein 1977: 128). The Hopkins and Wallerstein article of 1977 opened the doors to the field of commodity chain research not only on a national front, but also globally. Three approaches collectively constitute the field of inter-firm commodity chain research to date: (i) the world-systems tradition of macro and long-range historical analysis of commodity chains; (ii) the global commodity chain (GCC) framework and; (iii) global value chain (GVC) analysis (also more commonly known as simply “value chain analysis”), the newest variant based on its GCC predecessor (Bair 2009).

Various scholars, however, trace the concept back even further than the Hopkins and Wallerstein article – noting it as already present in the “filier” concept of the 1960s (Kaplinsky and Morris 2002; Raikes et al. 2000; Webber and Labaste 2010). The filiere approach is the French tradition of agricultural “filier” or “chain” studies – seen as a neutral and purely empirical category of research (Gibbon and Ponte 2005). The French state’s development policy for its colonial territories was often agriculture-centric and focused on commodities - local production and consumption. International trade and processing were largely overlooked until the 1980s, with “studies of trade seen as largely superfluous since their areas were controlled by state institutions which undertook all transport and marketing of commodities at prices set by the central administration”. (Raikes et al. 2000: 13-14). The filiere approach is static in character, outlining relations at a certain point in time. It does not indicate growing or shrinking flows of the commodity, nor the rise and fall of actors. Conversely, value chain analysis as we have come to know it today, provides quantitative and qualitative data, describes the perpetual flux of activities, the inter-relationships between actors involved in the “input supply, production, processing, marketing, and consumption” of a commodity (Haggblade et al. 2012: 4).

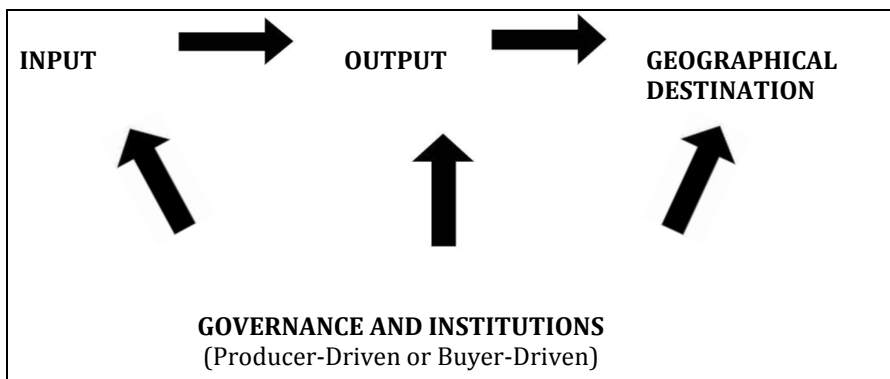
Other scholars point to the introduction of the commodity chain approach as a new paradigm introduced to explain a changing global economy brought about by industrial development (Raynolds 1994; Bair 2009). Following World War II, mass production for mass consumption or “Fordism” became the norm in the United States and Europe. It signaled the “growth of corporate manufacturing based on large, technologically rigid machinery and its associations with the deskilling of labor” (Raynolds 1994: 145). Fordism also affected the agricultural sector where large corporations began to institute mass production of standardized food, which was supplied to the consumer market (Raynolds 1994). Similar patterns of mass production have taken hold over developing countries, with a particular focus on mass production for export. In the 1980s international financial organizations started to place emphasis on neoliberal policy which focused largely on export-oriented industrialization (EOI), thereby encouraging developing economies to export those goods in which they have a comparative advantage, and open their domestic economies to imports in order to help secure access to markets abroad. The belief in the market forces was paramount. Under this premise, government was to play a limited role in the market place and national boundaries did serve as constraints for the market.

The first book-length manuscript devoted to commodity chains appeared in 1994, entitled “Commodity Chains in Global Capitalism” edited by Gary Gereffi and Miguel Korzeniewicz. In a key chapter written by Gereffi, he describes a framework for the study of what he calls Global Commodity Chains (GCC): (i) an input-output structure, describing the process of transforming raw materials into the final products; (ii) a geographical configuration; and (iii) a governance structure. In a later scholarly contribution in 1995, Gereffi added a fourth dimension - the institutional context.

The first two elements of Gereffi’s framework – input-output and geographical destination of the commodity - are straightforward “outlining chain configuration” (Gibbon and Ponte 2005: 76). As Sturgeon states, “They provide researchers with

their initial marching orders: to map the organizational and spatial division of labor in the chain that is under examination” (Sturgeon 2009: 127). The last two elements, governance and institutions, are causal in that “they contain explanations for observed organizational and spatial features...and highlight the forces external to the chain that structure (enable and limit) what actors in the chain do” (Sturgeon, 2009: 127). Governance and institutions ensure that the interactions between actors along a chain reflect some type of organization rather than being merely arbitrary. In fact, more than simply illustrating that some type of organization exists, these components provide insight into the process of how certain players are able to exert control or power over other participants, and thereby are also able to appropriate or distribute the value that is created along the chain (Bair 2009). In essence, analysis of governance and the institutional context within it is central to understanding how and why a value chain operates as it does. It provides more understanding about “the how” and “the why” than can be provided by only quantitative information on input, output and the geographical destination of a commodity (see Figure 1).

Figure 1: General framework of analysis for Global Commodity Chains



Source: Author’s diagram based on Gereffi’s Global Commodity Chains Framework.

The governance component of Gereffi's model – refers to his “producer-driven” and “buyer-driven” classifications. Producer-driven chains are where producers (generally vital technologies) play the role of coordinating the various links. Producer-driven chains are more likely to be characterized by foreign direct investment (FDI), capital-intensive production practices, high research and development (R&D) expenditures, and technology or skill intensive commodities, such as automobiles. Buyer-driven chains are those where large retailers and brand-name merchandisers play the central role in shaping decentralized labor-intensive production networks. Producers in this type of value chain have typically few options to whom to sell their goods. Examples of buyer-driven chains are agricultural products, footwear, clothing, furniture and toys.

The later inclusion of the institutional context reflects an acknowledgement that chains exist within a complex matrix of institutions. Researchers generally do recognize that institutions play a vital role in value chains, but there is no precise definition of what an “institution” is per se (Neilson and Pritchard 2009). There is a wide spectrum along which institutions can be defined. On the one side, in everyday usage institutions represent organizations (such as government and multilateral agencies), while on the other side of the spectrum they are perceived by neo-institutionalism as rules that govern society either in a codified manner (such as laws) or perhaps more informally via societal norms, for example (North 1991).

For the purpose of this dissertation, the “institutional context” includes the entire spectrum of the physical institution itself, the policies the institution advocates, in addition to those policies that are informal, such as norms of behavior for example. The institutional context outlines the actual organizations and the “rules of the game” that they advocate in a society, and “these rules can be formal (codified, such as in constitutions, laws and contracts) or informal (codes of conduct, norms of behavior, religious taboos, for example)” (Neilson and Pritchard 2009: 9). The thought process being that in order to include an institutional context in value chain analysis, the terminology must be wide in scope so as to capture as much as possible

about the context-specific forces affecting relations between different actors along the chain.

Gereffi built upon the commodity chain approach introduced in 1977 by Hopkins and Wallerstein, by emphasizing the global dimension via a focus on the strategies and actions of firms operating internationally. This emphasis on firms has been widely accepted and put to use by both practitioners and researchers because it has helped to explain novel features of the global economy, where modes of production, processing, marketing and consumption are no longer confined to a specific geographic area. The commodity chain framework allowed scholars to pose questions about contemporary development issues that were not easily handled or adequately addressed by previous paradigms and has permitted a better understanding about “the macro-micro links between processes that are generally assumed to be discreetly contained within global, national and local units of analysis” (Gereffi, Korzeniewicz and Korzeniewicz 1994: 2).

In later years, scholars started to replace the term “commodity” with “value” because it was thought to better capture a wider variety of chain activities and products, while placing emphasis on the concept of “value added”. Hence, the introduction of the terminology “global value chain” (GVC) (Gibbon and Ponte 2005: 77; Sturgeon 2009: 117). The term “value” initially was meant to refer to how a product changed as it moved through the manufacturing process – how it physically evolved from initial conception to end-use, such as cotton being utilized to make fabric and ultimately t-shirts for example. Each stage of the production process “added value” to the final product, and this “value” could be traced by analyzing price formulation at each stage. However, recent value chain analysis has demonstrated that physical alteration of the product is not always necessary to do a value chain analysis (Talbot 2009; Musasa et al. 2015). Value chain analysis can also be conducted to determine price formulation when the product itself has not changed physically. For example, when due to its trajectory along the chain (such as

when it gets packaged in a particular manner to lock in freshness), although the fruit or vegetable itself remains the same, the price is affected.

There is clear variation in how value chain analysis is conducted by scholars and institutions (Gereffi 1994; Kaplinsky 2000; Raikes et al. 2000; Gibbon and Ponte 2005; FAO 2007; Sturgeon 2009; Gereffi and Hamilton 2009; Bair 2009; Neilson and Pritchard 2009; IFPRI 2010; Haggblade et al. 2012). One of the key ways in which VCAs differ and which continues to be under debate amongst scholars is the scale of the analysis. Does the entire value chain from initial conception of the product to the end-use consumer commodity have to be analyzed to qualify as value chain analysis? Some researchers believe that every process and transaction from input to the consumer end-use product ought to be included in the analysis, while other researchers select segments and actors along the chain to analyze. In effect there is no single “correct” form of analysis. “It is hard to see that there is or can be any one “correct” definition” (Raikes et al. 2000: 11).

The scale is influenced by the purpose of the analysis. There are an almost infinite number of reasons why VCA is done. VCA does not per se need to only focus on understanding international firms and commodity production. Scholars have and are using VCA to explore specific issues such as for example gender dynamics (Barrientos 2001; Bolwig et al. 2008), trade and poverty (Koponen et al. 2008), commodity dependence and the potential to upgrade and differentiate products (Farfan 2005), to restructuring value chains so that they better incorporate particular actors (Haggblade et al. 2012). Some scholars such as Raworth and Kidder (2009) have advocated not using the international firm as the departing point for VCA, but rather taking workers or producers as the departing point for analysis. They argue that such an approach tells us more about how the value chain is affecting what in some cases are the poorest and most vulnerable portions of a population. Such information is crucial, particularly for governments, donors and non-government organizations looking to include smallholder farmers in modern value chains so that they can better benefit from the market.

The tomato value chain in Matseko is comprised of the activities and actors involved in the initial cultivation all the way to the end-product that the consumer buys. However, this dissertation will only focus on a segment of that entire chain. The focus will be placed on the farmer and the challenges that he or she encounters during his or her production of the crop, up until and including when he or she sells it. Such a specific focus should help provide a better understanding of the context in which farmers operate, and hopefully shed some light on the reasons for low levels of tomato productivity.

1.2: UPGRADING

The concept of upgrading has also been brought into value chain analysis and received much attention from scholars in recent years (Gibbon and Ponte 2005; Bair 2009; Neilson and Pritchard 2009; Webber and Labaste 2010; Haggblade et. al 2012). Initial discussion of upgrading referred to the possibility of firms to “actively seek to change the way that they are linked to global chains in order to increase the benefits that they derive from them” (Bair 2009: 29). Kaplinsky and Morris (2002) identify four categories of upgrading: process, product, functional, and chain. Process upgrading refers to increasing the efficiency of a firm’s internal processes so that they are better than those of a rival firm; product upgrading involves the introduction of a new product or improving the current one; functional upgrading refers to increasing value added by changing the mix of activities in a firm (such as outsourcing logistics and quality functions); and chain upgrading entails moving to a new value chain (such as the manufacture of transistor radios to laptops) (Kaplinsky and Morris 2002).

More recently, the lexicon upgrading has also been utilized to refer to the potential position and capabilities of firms *and producers* in specifically developing countries (Bair 2009; Gibbon and Ponte 2005). It has been linked to the discussion on the “Fordist” and “post-Fordist” systems, where the latter entails a shift from mass

production to more niche markets - smaller, but also higher-value products, such as organic farming in the agricultural sector. Upgrading for small-scale producers in many cases depends on developing stronger forms of coordination in the production segment (such as perhaps with agricultural extension officers and input suppliers).

1.3: THE GOVERNANCE DEBATE

The issue of governance within VCA and the producer and buyer-driven classifications of Gereffi have sparked numerous scholarly articles and debate (Raikes et al. 2000; Gibbon and Ponte 2005; Talbot 2009; Bair 2009; Raworth and Kidder 2009). Recent criticisms from scholars highlight that producer-driven and buyer-driven governance structures apply to merely one transaction linking a couple or more links in the chain, rather than being able to truly characterize larger segments or the entire chain itself (Talbot 2009; Bair 2009; Gibbon 2003). For example, a large food retailer requesting a specific set of standards from a supplier for a product, is able to establish and enforce a set of parameters over various actors along the chain, all the way to the farmer who is cultivating the original, raw produce, but it would not be able to exert such influence over the financial institution which is giving the farmer a loan. At the forefront of this research is the search for a better typology that can capture the governance structure characterizing larger segments of the value chain, and not just the link between two or three nodes “without oversimplifying the complexity of governance forms” (Talbot 2009: 99).

The governance debate also reflects that some value chains exhibit a tendency to move from one category of governance to another (Gibbon and Ponte 2005; Raikes et al 2000; Bolwig et al. 2008). For example, Gibbon and Ponte (2005) highlight that in some producer-driven value chains, such as consumer electronics, producers are increasingly outsourcing manufacture, supply-chain logistics and final assembly, while keeping control of promotion and marketing of the brand names – a trait of buyer driven chains. They also observed that the category of buyer covers a variety

of types who drive the chain in different ways with “the levels of driven-ness being higher in chains led by retailers, branded marketers, industrial processors (clothing, footwear, bananas, fresh fruit and vegetables, coffee, cocoa) than in those led by international traders (cotton, fish, cashew nuts)” (Gibbon and Ponte 2005). These debates have led to efforts to redefine governance in terms of how firms set and enforce the parameters under which others operate in the chain.

Gereffi, Humphrey and Sturgeon introduced a new analytic framework in 2004 with additional governance classifications – market, modular, relational, captive, and hierarchy.¹⁰ In this framework, value chains move across a spectrum from market value chains to hierarchy value chains. The level of coordination between buyers and suppliers increases, as the products become more complex and the availability of capable suppliers decreases. This is especially the case if product specifications cannot be adequately codified (due to their complexity) thus affecting coordination between suppliers and buyers. In market value chains the product specifications are simple and suppliers have the capability to produce without much input from the buyers. At the other end of the spectrum product specifications are complex, capability of suppliers is low or even non-existent, leading to a higher degree of monitoring and intervention by the buyer or in some cases even a buyer developing production skills in-house (Gibbon and Ponte 2005). Critique of this new framework is that although it highlights different forms of coordination between the buyer and supplier, and addresses the issue of which entity wields the power at a more micro-level, it still does not explain overall governance along the entire chain, involving all the other actors. “Although this framework captures some important elements that influence the forms of coordination between actors in different functional positions

¹⁰ The classifications are derived from the development of a matrix with three independent variables that can each take two values (high and low). These variables are: “(i) the complexity of the information and knowledge required to sustain a particular transaction; (ii) the ability to codify and transmit efficiently this information between the parties; (iii) the capabilities of the supply base in relation to the requirements of the transaction” (Gibbon and Ponte 2005: 81).

in a global value chain, it has only limited explanatory power to determine the overall form of governance” (Gibbon and Ponte 2005: 82).

In the agricultural sector, various scholars have highlighted the need for the framework to pay more systematic attention to regulatory change, especially when it comes to standards (Gibbon and Ponte 2005; Bolwig 2008; Reardon et al. 2001). Growing consumer concerns about food safety (salmonella, Avian Flu, antibiotic resistance for example), prompted large retailer supermarkets to introduce new quality, safety, and environmental standards. Gibbon and Ponte (2005) point out that while standards were previously imposed by public institutions, today standards are more commonly being administered by private entities, such as supermarkets. Food industry giants are adding stricter standards of their own in order to gain consumers and protect their reputations. The system is “increasingly a source of product differentiation, and thus competitiveness for successful firms” (Challies 2008: 387). Reardon notes that the role of standards has “shifted from a technical instrument to reduce transaction costs in homogeneous commodity markets to a strategic instrument of competition in differentiated product markets” (Reardon et al. 2001: 421).

Gibbon and Ponte (2005) introduced a typology consisting of four categories through which information about quality is transmitted to consumers – market, domestic, industrial and civic. Market coordination refers to instances where there is no uncertainty about a product’s quality and price is the main indicator of quality. In domestic coordination, quality is based on trust and reputation, often linked to a brand name, country or region. Industrial coordination entails quality being achieved via an external party who determines and enforces standards via inspection and certification, while in civic coordination quality is communicated where there is community concern for the collective well-being of a product which is widely recognized as having an impact on the society or the environment. According to Gibbon and Ponte their typology helps explain how standards, even those that are voluntary, are becoming de facto mandatory; meaning that they are a

requirement of certain actors if they want to operate in the value chain. In effect, the standard (i.e. quality) being enforced is directly related to how certain actors are exerting their power in value chains.

Gibbon and Ponte's typology work on quality communication, although not specifically focused on producers, does highlight the difficulties that such standards can entail for producers. While standards in the agricultural sector might mean more harmonization and fewer audits, it only applies to those producers who are able to meet the standards, often narrowing the pool of available suppliers. To sell in such a market, producers do not have a choice but to implement the standards via certification and verification, and if they do not have the resources to adapt and abide by such standards, then they are at risk of being placed out of the market. For example, the surge of Good Agricultural Practices (GAP), which started as an initiative amongst European retailers in 1997, and is now prevalent in 125 countries, has been criticized for hindering the participation of small-scale producers in the market (Reardon 2001; Gibbon and Ponte 2005).¹¹

Governance, in the value chain debate, is in effect looking at the issue of power. More specifically, it is the ability of a certain actor or actors in a chain to establish and enforce the parameters under which other actors must operate (Humphrey and Schmitz 2002). A problematic aspect of power, however, is that once introduced into an analysis and however well and clearly defined beforehand, "it has a tendency to be seen in all or nothing terms" (Raikes et al. 2000: 12). It may be possible though that more than one entity exerts power in different gradations along the chain - that there is no single form of governance that captures the entire chain, but rather that there are multiple forms of governance along the chain.

¹¹ For information about GAP, please refer to the GlobalGAP website at: http://www.globalgap.org/uk_en/what-we-do/

In 2002 Kaplinsky and Morris introduced a three-tiered governance analysis approach. According to Kaplinsky and Morris, governance should be seen in terms of three separate branches – legislative, judicial and executive - with each having a specific purpose in the value chain. Legislative governance establishes the basic rules which define the conditions of participation in the chain, while judicial governance serves to audit performance and check compliance with the rules, and finally executive governance provides assistance to value chain participants in meeting the operating rules (Kaplinsky and Morris 2002). Kaplinsky and Morris note that much of the existing discussion on governance fails to recognize this threefold distinction and hence is the reason why there is often confusion about which entity actually “governs” a particular value chain. Rather than seeing one entity responsible for governance of the entire chain, governance can be executed by various entities. Their approach is not only important in that it proposes a different approach to analyzing governance by dismissing the “single entity responsible for governance typology” of Gereffi, but Kaplinsky and Morris’ three-tiered approach also necessitates a more detailed examination of the actor(s) (and their corresponding policies), who are responsible for governance at different stages along the chain. This provides detailed information about actors’ interactions with each other and the context within which they have to operate. Kaplinsky and Morris, unlike Gereffi, are not specific about *which actors* are incorporated into the governance analysis – their approach is not fixated on the international firm. In effect, by facilitating analysis of different actors’ interactions with each other along the chain, the Kaplinsky and Morris approach provides an opportunity to obtain a more in-depth understanding about those actors and more broadly how and why a chain operates in a certain manner. It is a form of analysis particularly pertinent for the purpose of this dissertation, where the primary objective is identifying and understanding the challenges of tomato farmers in Matsekope.

CHAPTER 2: THE INTERNATIONAL, REGIONAL AND NATIONAL POLICY CONTEXT

The agricultural sector is squarely on the Government of Ghana (GoG) radar so to speak. It has been evident via the numerous projects and investments in the sector, such as the Medium Term Agriculture Sector Investment Plan (METASIP) 2011-2015, the Ghana Rural and Agricultural Finance Program (RAFIP) 2010-2016 and the Ghana Agricultural Sector Investment Program (GASIP) 2015-2023. As this chapter will illustrate, public sector support for agriculture in Ghana has been largely influenced by the era of de-regulation and global trade liberalization. Overall, the past decade has witnessed the Government of Ghana strive for economic growth and poverty reduction via agricultural development, and particularly promotion of agro-based industries and the export market. Farmers cultivating tomatoes in Ghana are affected by a gamut of international, regional, and national policies.

2.1: INTERNATIONAL POLICY CONTEXT

Global trade liberalization is part of a larger school of political and economic thinking, often referred to as “neoliberalism”, whereby the belief in the market forces is paramount. Under the neoliberalism premise, government is to play a limited role in the market place – rather it is market forces that promote a competitive equilibrium. There is an extensive amount of literature written on the origins and growth of neoliberalism with some crediting the inception as being the Mont Pelerin Society of 1947, while others cite the Structural Adjustment Programs touted by the World Bank (WB) and the International Monetary Fund (IMF).¹² In the trade sector, the cornerstone of the neoliberal approach is opening up the market as much as possible to the international world in order to allow for a “free” (i.e. no

¹² The founding statement of the Mont Pelerin Society makes a fundamental commitment to the ideal of personal freedom and free market principles. The renowned political philosopher Friedrich von Hayek was the founder and other notables included philosopher Karl Popper and economist Milton Friedman. For more information about neoliberalism, please refer to Harvey (2005); Saad-Filho and Johnston (2005) and Steger and Roy (2010).

constraints) flow of trade. For trade to be conducted in this manner, it entails a lowering and eventual elimination of import and export tariffs, otherwise known as “trade liberalization” and evident in today’s free trade agreements.

Free trade agreements formulate a core component of the European Union’s (EU) internal and external economic relations. To date, the EU remains Ghana’s largest trading partner with the EU accounting for 27.9 percent of total imports into Ghana and 33.1 percent of total exports (WTO 2014: 22).¹³ The initial reasons for the signing of the Treaty of Rome in 1957, giving rise to today’s EU, were largely political but yet closely intertwined with economic necessity. Post WW II, economies in Europe were drained, while the need for stability and peace was paramount. A liaison of countries under the auspices of an agreement such as the Treaty of Rome was beneficial on both the political and economic front. The rationale being that if countries are strategically linked (i.e. a political union and economic ties) then there will be more deterrent against war. Ever since the Treaty of Rome the EU has continued a process of regional integration, with the aim of increasing convergence among its member states and establishing a genuine frontier-free single market.¹⁴ The establishment of the monetary union and the introduction of the single currency have reinforced the drive towards economic integration and in essence trade liberalization. Externally, the EU has seized the opportunity of its union to become a key player on the world economic stage. The EU has been referred to as a “true goliath in the global economic environment” and consequently its’ “capacity to influence the expansion paths of the world’s developing countries is immense” (Sammon 2005: 191). The EU, currently one of the largest economic blocks in the

¹³ Gold now comprises 45 percent of Ghanaian international exports, followed by agricultural products (including raw and processed goods, as well as cocoa) at 18.3 percent (WTO 2014: 20). Imports into Ghana are largely manufactured items at 82.2 percent, followed by agricultural products (raw and processed) at 14.1 percent (WTO 2014: 20).

¹⁴ The Commission regularly presents updates on the Internal Market Strategy, establishing long-term objectives for improving the functioning of the Single Market. For more detailed information about the EU Internal Market Strategy refer to: <http://ec.europa.eu/growth/>

world, is in the process of negotiating various free trade agreements with third parties, such as the African, Caribbean and Pacific (ACP) states and Mercosur countries in South America.

Current EU-Ghana relations are largely subject to, although not limited to, the Cotonou Agreement of 2000 (which includes the Economic Partnership Agreements) and the National Indicative Program. The EU-Ghana National Indicative Program (2014-2020) under the 11th European Development Fund provides EU assistance (323 million Euro) to Ghana in a number of areas including governance (public sector management and accountability), agriculture (investment in agriculture programs in the savannah agro-ecological zones), as well as employment and social protection initiatives (European Commission 2014c: 7).¹⁵ Regarding agriculture, the assistance is aimed at promoting the development of programs that combat poverty, ensure food security, and address climate change adaptation and mitigation practices.

The initial form of cooperation between the EU and Ghana took place under the Lomé Convention, which was established in 1975 (hereafter also referred to as “Lomé”).¹⁶ It marked the initiation of development policy between the EU-ACP states, outlining cooperation in several areas, including EU aid policy, trade relations, democracy and good governance, environmental protection, and the

¹⁵ There are two main savannah zones in Ghana – Northern Savannah (Guinea Savannah and Sudan Savannah) and the Coastal Savannah (along the south of the country including the Greater Accra Region). The 323 million Euro is equivalent to approximately \$345 million dollars (U.S.) (January 2017). Currency conversion is available at the following website: <http://www.xe.com>

¹⁶ Technically one could go as far back as 1957 and the Treaty of Rome, for evidence of EU-ACP cooperation. Articles 131 to 136 of the Treaty provide for the association/relations between non-European countries and territories of European Economic Community member states and those member states. EU-ACP cooperation was further expanded in 1963 and 1969 with the Yaounde I and Yaounde II Conventions, which provided commercial advantages and financial aid to African ex-colonies. Following the Yaounde Conventions came the Lomé Convention, which was replaced by the current Cotonou Agreement.

promotion of the private sector (Holland 2002; Sammon 2005; and Ravenhill 2004). It was initiated largely to maintain the historical and commercial ties between the members of the EU (such as The Netherlands, France and Britain) and their former colonies. Britain's 1973 accession to the EU (then the European Economic Community) paved the way for integrating the special arrangements (i.e. largely preferential tariffs or otherwise known as preferential tariff treatment) that Britain had provided for trade with its former colonies.¹⁷ The preferential tariff system that was characteristic of EU-ACP trade policy was maintained throughout the 25 years of the Lomé Convention.¹⁸

The February 2000 expiration of the Lomé Convention provided an opportunity for a review of future relations. Negotiations for a new agreement started in September 1998 and were concluded in February 2000, resulting in the Cotonou Agreement, which is valid for a twenty-year period from March 2000 to February 2020. The advent of the Cotonou agreement of 2000 between the EU and ACP states altered the trade relationship from a preferential scheme, to one entailing trade liberalization. Under Cotonou the EU was able to grant one-way trade preferences to ACP countries only until 2008, when the preferential system was to be replaced by a reciprocal trade regime (i.e. trade liberalization) under the framework of a new trade arrangement called the Economic Partnership Agreements (EPAs).

The EPA negotiations were launched in Brussels in September 2002 and were conducted in two phases. The first phase included all ACP countries and the EU, taking on board cross-cutting themes of interest to all parties. The second phase, with specific focus on market access, commenced in October 2003 between the

¹⁷ As regards Britain and its former colonies, Lomé did not apply to India and Pakistan. (Ravenhill 2004: 119-120). "Preferential tariffs" meaning one-way tariff reductions is given by a "developed" country to a "developing" country. The developing country does not provide the preferential system to the developed country in return.

¹⁸ The Lomé Convention in place from 1975-2000 involved a series of trade treaties between the EU and ACP states (Lomé I in 1975, Lomé II in 1980, Lomé III in 1985 and Lomé IV in 1990).

separate ACP regions and the EU. These regional level negotiations were divided into seven regions as follows: Caribbean, Southern African Development Community, Eastern and Southern Africa, East Africa, West Africa, Central Africa, and Pacific region. The end objective being that the EU would have a new trade arrangement with each of these regions, cumulating in seven separate agreements.

Ghana was party to the negotiations regarding the EU-West Africa EPA, negotiated between the EU and the Economic Community of West African States (ECOWAS). ECOWAS is comprised of the following countries: Benin, Burkina Faso, Cape Verde, Cote D'Ivoire, Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo.¹⁹ A regional EPA between the EU and West Africa was not achieved by the original deadline of January 1, 2008. Instead, only Ghana and Ivory Coast agreed to Interim EPAs (IEPAs) at that time, covering mainly market access for goods. It was an "interim" agreement in the sense that it was not applicable to the region as a whole as originally hoped for by the European Commission, but instead was only agreed to by two individual countries (i.e. Ghana and Ivory Coast) and the EU. However, negotiations for a regional West Africa EPA with the EU continued and were finally concluded in February 2014.²⁰

European Commission Rationale for Trade Liberalization under the EPA

The issue of World Trade Organization (WTO) compatibility played a primary role in bringing about the trade liberalization under discussion in EPA negotiations. In 1997, the WTO Dispute Settlement Panel ruled that the EU's banana regime was not compliant with WTO rules. The case was brought to the WTO by several Central

¹⁹ In 2000 Mauritania withdrew its membership from ECOWAS, but agreed to negotiate the EPA within the grouping of ECOWAS.

²⁰ To date, EPA negotiations are still on-going with Central Africa, Eastern and Southern Africa, and the Pacific regions. At the time of writing, the EPA between the EU and West Africa is still pending implementation. However, in the case of Ghana, the IEPA between Ghana and the EU has been formally signed, ratified and is being implemented, thereby guiding overall trade relations between Ghana and the EU.

American countries and the United States. The topic of contention was the Lomé Convention's protocol on bananas. The complete story of the process whereby the EU was forced to bring its banana regime into compliance with the WTO rules is beyond the remit of this thesis, but what is important to note is that it triggered further questions about the legality of the Convention itself.²¹ The primary area where the Convention was seen to be in contradiction to WTO rules was the Most Favored Nation (MFN) principle (Article I of the General Agreement on Tariffs and Trade - GATT). In basic terms, the MFN principle stipulates that a member country is obliged to extend to another member country the lowest tariff rates it applies to any other member country. Thus, preferences granted to one member must automatically be extended to all others. Exceptions are foreseen to the MFN principle, but only under the following conditions:

- (i) In accordance with GATT article XXIV, if the MFN rule is not applied, then the countries concerned must set up a "customs union or a free trade area...in which duties and other restrictive regulations of commerce are eliminated on substantially all trade between the constituent territories". (WTO 1994: 458-459). In the most basic terms, it is a system involving reciprocity / trade liberalization and not one-way trade preferences.

²¹ Ravenhill (2004) notes that at various stages the policies were found to contravene Article I, Article III.4 on National Treatment, Article XII on the nondiscriminatory administration of quantitative restrictions, Article XXIV on regional trade agreements, and Article V of the General Agreement on Trade in Services, as well as elements of EU competition law (Ravenhill 2004: 128).

Ravenhill (2004) also explains that the "objections of other countries to the banana regime were not because it provided tariff preferences for ACP countries, but because of the way in which the regime's quotas limited the access of other suppliers, and because its import licensing system discriminated in favor of European commercial interests" (Ravenhill 2004: 129).

- (ii) The Enabling Clause, which allows special and differential treatment to be granted by a developed country to all developing countries or to the least developed subgroup among the developing countries (WTO 2017a).²²

In the case of the Lomé Convention, it fit neither of the exceptions - it was not a reciprocal regime and it did discriminate against non-ACP developing countries. The incompatibility with WTO rules has been one of the main arguments put forth by the European Commission to justify the end of the preferential arrangement with ACP states. There was the legal possibility for the EU and ACP states to request an extension of the preferential regime beyond 2008, however, the EU declined to submit such a request, opting rather to put in place a new trade regime. WTO members require concessions in exchange for granting a waiver. Safeguarding ACP preferential arrangements would have thus come at a price for the EU, which it was not prepared for in light of the Doha Development Agenda (DDA) multilateral trade talks - i.e. the waiver would hinder the EU's negotiating power within the DDA.

The European Commission has also argued that the EU-ACP preferential trade relationship has been up against a changing world economy, which in recent decades has moved towards increased tariff liberalization coupled with preference erosion. The 1994 conclusion of the Uruguay Round (international trade negotiations) resulted in general tariff liberalization characterized by a reduction in import tariff levels on a global scale.²³ A global reduction in import tariffs in essence means that the special preferential tariff arrangements enjoyed by developing countries exporting globally, becomes less meaningful for them. The preferential arrangement gives developing countries less of an advantage than before the global reduction. In addition, in 1971 the EU extended tariff preferences to all remaining

²² For more information about the Enabling Clause (officially called "The Decision on Differential and More Favorable Treatment, Reciprocity and Fuller Participation of Developing Countries"), refer to the WTO website at: http://www.wto.org/english/docs_e/legal_e/enabling1979_e.htm#fntext1

²³ For more details on the tariff levels, refer to Van Dijck and Faber (2000).

developing countries under its Generalized System of Preferences (GSP) regime.²⁴ More and more developing countries were benefiting from preferences, coupled with internationally lower import tariff levels. Subsequently, as regards access to the EU market for ACP goods, the European Commission argues that the preferential EU-ACP trade regime was becoming less beneficial for ACP countries due to more competition from non-ACP developing states exporting to the EU.

Another reason cited by the European Commission for replacing preferences with reciprocity was to promote better integration of the ACP economies into the world market and thereby hopefully contribute to poverty eradication. In former EU Trade Commissioner Peter Mandelson's words, "the old-style preference regimes have not provided a pathway out of poverty. If anything they have reinforced a damaging dependence on limited tropical commodities" (Mandelson 2005).²⁵ It has been argued by the European Commission that the Lomé Convention perpetuated ACP dependence on the EU, since ACP countries were given no incentives to diversify their exports. The Lomé Convention promoted ACP dependency on raw materials as an export base in exchange for importing primarily industrial goods from Europe (Holland 2002).

Based on research interviews for this thesis, it should be noted here that several interviewees highlighted that there was also a great deal of pressure from industry in Ghana to sign an IEPA. There was fear from industry that they would lose market access to the EU without such an agreement. Examples include the banana and in particular the cocoa industry, which feared increased export tariffs and were thus

²⁴ At time of writing there are 3 main variants of the GSP scheme – namely the standard GSP arrangement, "GSP +", and "Everything But Arms". For more information on the EU GSP refer to the European Commission website at: <http://ec.europa.eu/trade/policy/countries-and-regions/development/generalised-scheme-of-preferences/>

²⁵ Commentary that former EU Trade Commissioner Peter Mandelson wrote in newspaper The Guardian (October 3, 2005).

actively lobbying the Ghanaian government. Ghana is the world's second largest producer of cocoa with annual exports of over U.S. \$2 billion (WTO 2014: 8).

What the EPA means for Ghana and Its Tomato Sector

The core objective of both the EU-Ghana IEPA and the EU-West Africa EPA is trade liberalization. Under both agreements there is duty-free and quota-free access to the EU market for an unlimited period of time for all imports coming from ECOWAS states, while EU exports to ECOWAS nations will experience gradual tariff dismantlement. The IEPA calls for 70 percent of imports from the EU into Ghana to experience gradual tariff dismantlement, having until the year 2022 to complete the process, while the regional EPA calls for 75 percent of imports from the EU to the entire ECOWAS region to experience gradual tariff dismantlement over a 20-year period (European Commission 2014b: 1). In both texts, and key for this dissertation, is that the remaining percent of imports from the EU have been deemed “sensitive products” – and it includes a list of largely agriculture produce as well as agro-processed products, which will continue to be subject to current tariffs (European Commission 2014b: 1; European Commission 2015b: 2; European Commission 2016b: 1). In both the IEPA and the EPA, tomatoes as well as tomato paste are included in this list. New duties on imports originating from the EU are not allowed on commodities in this list, and those duties currently applied cannot be altered.

Trade liberalization reduces tariffs on imports and should thereby lead to increased competition between domestic and foreign firms. Critics of this approach to trade argue that such liberalization can create a surge of imports into the developing country, where the local producers are simply unable to compete against the lower priced imported goods.²⁶ In Ghana there was definite opposition to the EPA, voiced

²⁶ There is extensive literature on how certain producers are simply priced out of the market in light of trade liberalization. For example, refer to Shafaeddin (2000); Nayyar (2006); Kohr and Hormeku (2006); Ahmed and Lipton (1997).

publicly by various civil society groups.²⁷ As one non-governmental organization (NGO) representative pointed out during the fieldwork research (interview), the EPA brings with it skepticism due to past events and fear of the unknown. The country's past experience with the World Bank and International Monetary Fund's Structural Adjustment Program of the early 1980's left the average Ghanaian somewhat skeptical about trade liberalization and the absolute belief that market forces can achieve a competitive equilibrium, without disadvantaging local industry (see more detailed discussion below in this chapter under National Policy Context). During fieldwork interviews, several NGOs pointed out that the underlying assumption in trade liberalization is that the countries participating in it are on an equal par, but that is not always the case – and not the case when it comes to the European Union and Ghana. The participating parties do not necessarily have the same level of competitive edge to take advantage of free trade. Some entities viewed the EPA as a form of neo-colonialism, where the EU imposes a trade regime upon Ghana to the EU's benefit. Other entities noted that the EPA should not be focused on trade liberalization but rather on how it could support regional and national policy aimed at the growth of the agricultural market via industrial development and diversification of products. Generally, for those opposed to the EPA, when it came to the issue of trade, at the heart of the matter was and still continues to be the fear that liberalization will cause a surge in imports, and that Ghanaian producers might simply not be equipped to compete with them.

For the Ghana tomato sector, imports of fresh tomatoes have already risen in the past decade (which is why it has been put on the EPA “sensitive” list of products), but the fresh tomato is not a top-importing commodity into Ghana (FAO 2017c).²⁸

²⁷ Some examples of local NGOs/civil society groups publicly active in the EPA debate in Ghana were the Third World Network (see Third World Network 2008); Christian Aid (see Lambrechts et al. 2005); ActionAid, and ISODEC.

²⁸ According to FAO statistics, imports of fresh tomatoes into Ghana started only in 2003 with 1 tonne and the most recent statistics (2013) place it at 5,945 tonnes.

However, there has been a definite rise in tomato paste imports into Ghana, ranking it consistently over the past decade as one of the biggest importing commodities. The importation of tomato paste rose from 148 tonnes in 1983 to 109,513 tonnes in 2013 (the most recent year of FAO available statistics) (FAO 2017c).²⁹ Under the new EPA, import duties for tomato paste cannot be changed, but maintaining the tariff import schedule for tomato paste may thus be more damaging than what appears on the surface. Proponents of liberalization argue however that the new agreement provides safeguard measures which can be taken when a product originating in one country is imported into the territory of another country “in such increased quantities and under conditions which cause or threaten to cause serious injury to the domestic industry of like or directly competitive products in the territory of the importing Party” (European Commission 2014a: 34). Starting a grievance process is however time and resource intensive, putting developing countries at a disadvantage during a time period when immediate action is needed to help their local market.

Specific to agriculture, the EU has erected some of its most protectionist policy, restricting developing countries and least developed countries access to the EU agricultural market. Rules of Origin (ROOs) are a key example. The EU ROOs are extremely complex, with developing countries having limited resources to take full advantage of them. ROOs are defined by the WTO as “those laws, regulations and

Fresh tomatoes have been put on the EPA sensitive list because tomatoes are needed to make tomato paste. If there is tariff dismantlement on imports of fresh tomatoes coming into Ghana, then there might be the possibility (similar to what happened with tomato paste) that the imported fresh tomatoes flood the Ghanaian market, leaving Ghanaian producers unable to compete and at a disadvantage.

The most recent FAOSTAT statistics available for import and export of tomatoes and tomato paste are for the year 2013.

More information about the import and export of tomatoes and tomato paste is available at the FAO website at: <http://www.fao.org/faostat/en/#data/TP>

²⁹ Refer to FAO website at: <http://www.fao.org/faostat/en/#data/TP>

administrative determinations of general application applied by any Member to determine the country of origin of goods” (WTO 1994: 211).³⁰ To take advantage of a tariff preference, an exporting country must satisfy rules of origin to substantiate that it has produced the good rather than that it was imported. The preference is contingent on a minimum valued addition to the end product in the exporting country, which often serves as a deterrent for many ACP states, as they are often only able to perform the more simple operations. “Sufficient transformation” of the product is considered either a change in tariff subheading, or local content of at least 30 percent. (WTO 2014: 47). The United Nations Convention on Trade and Development Working Group has done and continues to do research in identifying the shortcomings and challenges of the origin system and consequent obstacles it poses for the utilization of preferences.

In the IEPA between the EU and Ghana the issue of cumulation was particularly contentious since the agreement only allowed for cumulation with countries that had also signed an IEPA. Therefore at that time, within West Africa, Ghana could only cumulate with Cote D’Ivoire. In practice it meant that Ghanaian exporters of processed products, that were made from inputs from other West African countries like Togo for example, would not enjoy privileged market access to the EU. This creates difficulties for current and future production, especially in the agro-processing sector, where Ghana may need to rely on the economy of neighboring countries. For example, if Ghana had adequate infrastructure to can tuna, under the ROOs scheme within the IEPA, if Ghana used tuna caught in Togo waters to produce canned tuna for export to the EU, it would not qualify for preferential access. In the new West Africa – EU EPA though, the issue is no longer as contentious, since the agreement has been agreed to at a regional West African level. However, according to a recent (2012) World Bank study, the registration process under ROOs is burdensome and in effect hindering duty-free trade. A lengthy, two-stage – national

³⁰ For more information on ROOs, please refer to the WTO website at: http://www.wto.org/english/tratop_e/roi_e/roi_info_e.htm

and regional committee - approval process takes place. Registration is needed for every product a company intends to export under the scheme, with the approval process taking anywhere between 4-6 months. The EPA does call for all Parties in the agreement to draw up new rules of origin at the latest 5 years after the date of entry into force of the EPA, “with the aim of simplifying the concepts and methods used to determine origin, in the light of the development objectives of the West African region” (European Commission 2014a: 20).

Similar to ROOs, product standards are another example of stringent EU policy. Product standards require exported goods to comply with a range of standards and regulations set by the importing market, particularly in the agricultural sector with Sanitary and Phytosanitary Standards (SPS).³¹ Although it is important for certain standards to be met, such as health and safety standards, they have become numerous. Consequently, developing and least developed countries find the compliance to be difficult and expensive. The EU Regulation on traceability (EC/178/2002) is an example of the detailed information that the EU requires of imported food products. The Regulation brings into law the requirement of being able to identify the origin and authenticity of sources regarding any food, including fruits and vegetables that enter the European Union. “In the fruit and vegetable sector, where ACP exports have been growing in the last 15 years, securing the full benefits of duty-free, quota-free access is made difficult by the manner of application of stricter SPS, food-safety and private sector standards...particularly disadvantaging small-scale producers” (CTA 2008: 4).

While the European Union remains Ghana’s largest trading partner, since the early 2000s other countries in Africa and Asia (particularly China) have emerged as other key players (WTO 2014). China is proving to be a relatively new trading block for

³¹ A more in-depth discussion on standards, including the WTO SPS Agreement, is available in chapter six (“A Producer or Buyer-Driven Value Chain?”) and chapter seven (“Uncovering Multiple Forms of Governance”).

Ghana. China's economic presence and its investment in Ghana have grown steadily over the past two decades. The two countries established diplomatic relations in 1960 and their bilateral relations began soon thereafter with Ghana receiving its first concessional loan from China in 1964 in the amount of \$12 million (U.S.) (Tsikata et al. 2008: 24).³² Over the course of the following decades, Ghana received aid from China in various forms (loans, grants, technical assistance) with a focus largely on infrastructure development in Ghana, and a bilateral investment treaty was signed in 1989 between both countries. In recent years China has implemented an assertive foreign policy towards resource-rich countries such as Ghana, developing investment and trade relations which often involve an exchange of natural resources (such as metals and oil) for Chinese industrial manufacture (Rubiolo 2016). At the end of 2014 China topped the Ghana Investment Promotion Council list with the highest number of registered investment projects in Ghana (GIPC 2015: 3). According to the most recent WTO statistics, while a relatively small portion of Ghanaian exports go to Asia (8.3 percent), a substantial portion of imports into Ghana come from China at 17.2 percent, equivalent to \$2.4 billion (U.S.), second only to the European Union at 33.1 percent (WTO 2014: 22).³³

2.2: REGIONAL POLICY CONTEXT

At the regional level there are two key framework documents that affect Ghana's policy relating to economic growth and in particular its agricultural sector, including agro-based industries. Both documents promote economic growth via agriculture. The premise being that growth in the agricultural sector contributes to employment, income generation and a reduction in poverty. One of the documents was

³² A concessional loan is a loan that is given based on terms that are more generous than market loans - achieved either through interest rates below those available on the market, or by grace periods, and possibly a combination of both factors. For more information refer to the Organization for Economic Co-operation and Development (OECD) website at: <http://stats.oecd.org/glossary/detail.asp?ID=5901>

³³ Total amount of imports into Ghana was \$14 billion (U.S.) according to the World Trade Organization (WTO 2014: 22).

established at the West African regional level, whereas the other was introduced at the continental level. The documents do not contradict but rather complement each other – they are the Regional Agricultural Policy for West Africa and the Comprehensive African Agricultural Development Program.

The Comprehensive African Agricultural Development Program (CAADP) was initiated in 2003 by the African Union (AU) within its broader program, the New Partnership for Africa's Development (NEPAD). At the continental level, Ghana is a member of the African Union, which was established in 1999 with the aim of accelerating integration and development of its member nations. The main goal of CAADP is economic growth through agricultural development. It is a framework document, which is to be used by member states as a tool for further policy development. Calling for an annual agricultural growth rate of at least 6 percent and an allocation of at least 10 percent of the national budget to agriculture, it is comprised of 4 pillars: (i) extension of the area under sustainable land management and reliable water control systems; (ii) more market access via rural infrastructure and trade-related interventions; (iii) increasing food supply and reducing hunger by increasing smallholder productivity and improving responses to food emergencies; and (iv) agricultural research in order to disseminate new and appropriate technologies (Republic of Ghana 2009: 3).³⁴ Since 2009, Ghana has been meeting the objective as regards government expenditure on agriculture, with it growing to just over 11 percent over the past several years. Meanwhile, the annual agricultural growth rate has declined during that time, with one of the latest figures putting agricultural growth at 4.6 percent for 2014 according to Ghana's Ministry of Finance and Economic Planning (MOFEP 2015: 14).

³⁴ For more information please refer to the CAADP website:
<http://www.nepad.org/cop/comprehensive-africa-agriculture-development-programme-caadp>

Ghana is a member of ECOWAS - as noted earlier on in this chapter - a regional entity headquartered in Abuja, Nigeria. Founded in 1975 via the signing of the Treaty of Lagos, its objective is to promote economic integration amongst its member countries. In 2005 it adopted its regional framework for the agricultural sector called the Regional Agricultural Policy for West Africa or ECOWAP. Although not a document outlining specific actions to take place, it does outline key principles and objectives that are to guide national member state agricultural policies. There were various reasons why the countries involved believed that a regional agricultural policy was necessary - from the need to cooperate on natural resources that span several West African countries, to viewing regional integration as a means to position the region on the world stage. The overarching objectives of ECOWAP are three-fold: (i) to create sustainable food security in member states; (ii) an increase in wages for agricultural producers; and (iii) the expansion of sustainable trade within the region and internationally (ECOWAS 2006).

Agriculture is the core of most member state economies within the AU and ECOWAS. Central to both the CAADP and ECOWAP documents is that agricultural development is key to overall economic development. Such development will benefit populations, but it requires a multi-faceted strategy including the ability to conduct increased trade - nationally, regionally, and internationally. In the case of Ghana, as will be explained in the following sections of this chapter, the overarching objectives in the above-mentioned framework documents are evident in Ghana's broad, national development policy as well as its more agriculture-specific programs.

2.3: NATIONAL POLICY CONTEXT

Ghana gained its independence from British colonial rule in 1957. The first post-independence president of Ghana, Kwame Nkrumah, sought to bring about economic diversification by moving Ghana from a primarily agricultural economy to a mixed agricultural-industrial one. With Ghana being a leading producer of cocoa globally, cocoa reserves were used as security to take out loans to establish industries that would produce not only import substitutes, but also process many of Ghana's exports. However, in the mid-1960s the price of cocoa collapsed, lowering the amount of money that Nkrumah had at his disposal to repay loans, and thus ultimately forcing Nkrumah to temporarily halt his plans for economic reform.

Two entities were established however in 1971 to promote agricultural production, marketing and processing – the Food Production Corporation (Legislative Instrument 711) and the Food Distribution Corporation (Legislative Instrument 714). The Food Production Corporation was established with the remit to undertake large-scale production of food items including crops, livestock and poultry, which would “be processed where necessary and also marketed” (Republic of Ghana 1971a: 1). The Production Corporation also called for more training in scientific agriculture, the development of farms as training grounds where “undergraduates, newly appointed agriculturists and other persons interested in farming may gain practical experience in agriculture” and for “facilities for the demonstration of usable agricultural research findings and improved practices to farmers” (Republic of Ghana 1971a: 1). The Food Distribution Corporation was responsible for buying and storing food from producers. There were specific collection points where farmers could go to sell their produce. In addition, the Distribution Corporation was responsible “to buy and sell agricultural machinery and implements to farmers”, and “to export foodstuffs to overseas markets” (Republic of Ghana 1971b: 1).

Ghana underwent a series of military coups though in the following two decades with none of the administrations being able to curb the reliance on loans and the

vulnerable world commodity market. By the early 1980s Ghana's economy was on the verge of collapse – inflation reached a record high in 1981, real minimum wages dropped, along with a decline in cocoa production, reducing Ghana's share of world trade in the commodity (La Verle, 1995). In addition, in 1982 one of the worst cases of drought in Ghana's post-independence history led to unprecedented food shortages. The drought not only destroyed approximately one third of all farms – both food and export crops, including cocoa – but it also reduced the generation capacity of Ghana's main hydro-electric dam (by Akosombo) giving way to power rationing (Hilson 2004). In 1983 following a period of lengthy consultations with the International Monetary Fund and the World Bank, Ghana adopted the 1983-1986 Structural Adjustment Program (SAP), under the label of the Economy Recovery Program (ERP) for 1 billion U.S. dollars.

The Structural Adjustment Program, designed by the IMF and the WB, was based on the fundamental principle that market forces achieve a competitive equilibrium. These programs were intended specifically for countries with “high inflation, large account deficits in balance payments and low growth rate” (Hilson 2004: 54). Borrowing countries had to implement measures aimed at a vast array of sectors in order to promote a more stable financial and economic environment. The ERP/SAP for Ghana was meant to be a stabilization package designed to curb government expenditure in the market, restore fiscal and monetary discipline, and stimulate the export industry (Hilson 2004: 58).

Advocates of the SAP argue that the policy prevented the country from experiencing economic collapse. Within three years the macroeconomic reforms helped lower inflation from over 100 percent to 33 percent. Ghana's GDP growth, which was negative in the early 1980s, averaged 5 to 6 percent between 1984 and 1991 and between 2 to 4 percent since 1992. Meanwhile, poverty declined from 36 percent of the population at the beginning of the 1990s to 29 percent at the end of the decade, although with sharp variations across regions (Tsikata 2001: 8; Hilson 2004: 61).

Critics of the SAP argue that despite achieving macroeconomic achievements, the process marginalized the most impoverished groups. At the inception of the ERP/SAP in 1983, the government of Ghana was heavily involved in the market, with 235 state-owned enterprises of which the government had majority holding in 181 (Hilson 2004: 61). Moreover, the government provided significant subsidies on inputs to farmers. Fertilizers and certified seeds were then and are still today among the major purchased inputs for farmers. Before the ERP/SAP, the public sector had the sole responsibility for the fertilizer and marketing functions, however, with the advent of the ERP/SAP such functions were transferred to the private sector and consequently many industries received less government assistance. Opponents of the SAP argue that the restructuring program brought about macroeconomic stability but at a long-term cost. That it facilitated widespread foreign ownership within the primary industry sectors, while debilitating local industry of much-need support, causing loss of employment and livelihood means.³⁵

The National Development Policy Commission Programs

Various ministries are involved in the overall development policy of Ghana – a policy, which has been and continues to be largely focused on poverty reduction via employment creation and income generation especially in the agricultural sector. The National Development Policy Commission (NDPC) is the overarching entity responsible for development in Ghana. It was established in accordance with Article 86 and 87 of Ghana’s 1992 Constitution. It is the lead agency in advising the President of Ghana on development policy and strategy, and coordinates overarching development programs – the Ghana Poverty Reduction Strategy (GPRS I), the successor Growth and Poverty Reduction Strategy (GPRS II), and the Ghana Shared Growth and Development Agenda (GSGDA), also known as the Medium-Term National Development Policy Framework (2010-2013) under the Coordinated

³⁵ For further discussion on the effect of the SAP please refer to Tsikata (2001); Kohr and Hormeku (2006); Nayyar (2006); and Shafaeddin (2000).

Program of Economic and Social Development Policies (2010-2016). The NDPC can on its own initiative, or by way of Parliament, be called upon to initiate policy or make strategic analyses. The Commission is comprised of a Chairman (appointed by the President in consultation with the Council of State), the Minister of Finance, the Government Statistician, the Governor of the Bank of Ghana, one representative from each region of Ghana (appointed by the Regional Coordinating Council of the region), and a Secretariat of professional and technical staff divided into separate departments.³⁶

The first GPRS took place from 2003-2005 and was geared to the attainment of reducing poverty. GPRS II was initiated in 2006 and followed through on the programs implemented under GPRS I, but included a new focus on economic growth and the attainment of middle-income status.³⁷ Emphasis was placed on changing the structure of the economy by making it less reliant on export earnings from a mere select group of primary commodities. Development of the private sector, diversifying the export base and increasing agricultural productivity and rural incomes were the cornerstones of the second Strategy. As regards agriculture, both the first and second Strategies had a long-term vision of developing the agro-based industrial economy. In this respect, a range of interventions were identified, including reform of land acquisition and property rights, acceleration of the provision of irrigation infrastructure, enhancement of access to credit and inputs, increasing access to extension services, promotion of agro-processing, enhancement of agricultural marketing and access to export markets (NDPC 2005). While the

³⁶ The Council of State was established according the Ghana's Constitution (Articles 89-92) to counsel the President on national and international issues. It is similar to the Council of Elders in the traditional political system. The Regional Coordinating Council (Article 255) is an administrative and coordinating body which is responsible for monitoring, coordinating and evaluating District Assemblies - in particular their use of money allocated to them by central government agencies and the status of public services in the districts of the region. The policy departments of the NDPC are Economic, Production and Technology, Social, Spatial, General, and Public Sector Management.

³⁷ According to the GPRS II document "middle-income status" is defined as a per capita income of at least U.S. \$1,000. (NDPC 2005: xxi).

GPRS I focused on poverty reduction programs, GPRS II focused on growth inducing policies (primarily diversifying the agricultural export base) that had the potential to increase incomes and allow the population more access to tangible goods and services.

The Ghana Shared Growth and Development Agenda (GSGDA) of 2010-2013 covered the first phase of the Coordinated Program of Economic and Social Development Policies (2010-2016), which was former President John Evans Atta Mills' response to his constitutional duty (Article 36, section 5). According to the Ghanaian constitution, "within two years of assuming office, the President shall present to Parliament a coordinated program of economic and social development policies, including agricultural and industrial programs at all levels and in all regions of Ghana" (Republic of Ghana 1992a: 37-38). Similar to both GPRS I and GPRS II, the overarching objective of the GSGDA was poverty reduction with a continued focus on economic growth and building Ghana's agricultural export base. The capacities of smallholder farmers and processors were to be transformed into large-scale operations that "integrate the smallholder farmer to meet the complexities of the markets...enhancing Ghana's competitive advantage in export markets" (NDPC 2010a: 35).

*Ministry Programs Related to the Agricultural Sector*³⁸

The Ministry of Trade and Industry (MOTI) is the lead ministry when it comes to international trade negotiations, but at the national level it also plays a key role in developing policies that promote industrial development, including agro-based industrial development. The Industrial Sector Support Program (ISSP) of 2011-2015, together with Ghana's overall Industrial Policy, provide the broad guidelines

³⁸ In addition to the various ministry programs, other entities, including donors and NGOs are active in projects aimed at bringing about growth in the agricultural sector and thereby helping to reduce poverty. Although a discussion about the full extent of these programs is not the aim and beyond the remit of this dissertation, a list of EU-Ghana projects can be found at:

http://eeas.europa.eu/delegations/ghana/projects/list_of_projects/projects_en.htm

for action in the industry sector.³⁹ The key objectives of MOTI's Industrial Policy is to expand productive employment and technological capacity in the manufacturing sector, promote agro-based industrial development, and spatial distribution of industries in order to reduce poverty and income inequalities (MOTI 2011a). With a total budget of just over \$346 million (U.S.) over the 5-year period, the policy outlined 18 individual but inter-related projects.

The project perhaps most directly affecting the agricultural sector and its farmers was that of "Raw Materials and Input Supply". Of primary importance within this project was the objective of ensuring that agro-based industrial raw materials be "produced locally at competitive prices for local manufacturing" (MOTI 2011a: 13). In order to achieve this, the government encouraged intensification and / or expansion of selected agro-based raw materials (including a specific mention of tomatoes), the development of yield, quality and productivity benchmarks, expansion of irrigation facilities, as well as the provision of inputs such as machinery and fertilizer. This Industrial Policy was meant to help Ghana meet its long-term vision of achieving higher levels of job creation and poverty reduction, via increased domestic production and trade.

The Ministry of Finance and Economic Planning (MOFEP), due to its overarching role in coordinating the national budget, also plays a central role in supervising the 2010-2016 Ghana Rural and Agricultural Finance Program (RAFIP). With an overall budget of \$41.9 million (U.S.), the program is being funded mainly by the International Fund for Agricultural Development (IFAD) along with other international institutions (World Bank, African Development Bank) as well as the Government of Ghana (IFAD n.d.)⁴⁰ The overall goal of the program is to enhance

³⁹ Although not directly focused on the agro-industrial sector, MOTI also initiated in 2010 a 5-year Private Sector Development Strategy, which is a framework document aimed at establishing a business environment which will encourage the private sector to invest and create more jobs in the country.

⁴⁰ More information about RAFIP is available on the IFAD website at: <https://operations.ifad.org/web/ifad/operations/country/project/tags/ghana/1428/project-overview>

access to financial services for the rural and agricultural population in the country. The focus is on improving the rural banking network via technical assistance, business development services, and implementation of microfinance strategies. IFAD is also currently working with the Government of Ghana on the Ghana Agricultural Sector Investment Program (GASIP) of 2015-2023. The overall aim of GASIP is to contribute to sustainable poverty reduction in rural Ghana. Focus is placed on more effectively linking smallholder farmers to agribusinesses by utilizing value chain analysis and climate change resilience strategies. Investments are to be made in commercial infrastructure and facilities, particularly in the rural areas of the three most northern regions of Ghana. Program costs for the first six years are estimated by the GoG to be \$113 million (U.S.) with IFAD putting forth \$71.6 million (MOFA n.d. GASIP).⁴¹

The Ministry of Food and Agriculture (MOFA) is the premiere government entity addressing food and agricultural issues in the country. It is headed by the Minister of Food and Agriculture and supported by three Deputy Ministers – one in charge of fisheries, another of livestock and the third of crops. There are four line directorates and eight technical directorates. The Ghana Irrigation Development Authority (GIDA) as well as the Irrigation Company of the Upper Region (ICOUR) are also agencies within MOFA. Several broad-based policies have been initiated by MOFA over the past decade, with each one featuring the importance of growth in the agricultural sector in order to contribute to overall economic growth and poverty reduction.⁴²

⁴¹ For more information about GASIP, refer to the MOFA website at: http://mofa.gov.gh/site/?page_id=13706

⁴² A report by the Food and Agricultural Organization (FAO), “Roles of Agriculture: Analyses of the Ghana Living Standards Surveys of 1991/92 and 1998/99” demonstrated that growth in the agricultural sector “stimulated higher rates of growth in the economy via forward linkage activities such as processing and transportation, and backward linkages to the provision of services in the sector, with further growth spurred as a result of spending of incomes earned from all these productive activities” (MOFA 2007: 3).

One of the more recent policies initiated by MOFA is the Medium-Term Agriculture Sector Investment Plan (METASIP), which came into effect in 2011 until the end of 2015. METASIP was an investment plan with the target of achieving within its operational time period, agricultural sector GDP growth of 6 percent annually and a government expenditure allocation of 10 percent of the national budget for the sector. The plan's main objective was to direct investment so that it could increase outputs and generate income for all categories of farmers. The highest priority was given to actions that impact farm production. Program 1 (Food Security and Emergency Preparedness) and program 2 (Increased Growth in Incomes) within the plan comprised the majority of the budget (1.4 out of 1.5 billion Cedis) (MOFA 2010b: xi-xii). Improving productivity, the promotion of cash crop, livestock and fish production for income in all ecological zones, irrigation and water management, and the development of rural infrastructure were the most prominent issues.

METASIP was initiated in follow-up to MOFA's Food and Agriculture Sector Development Policy (FASDEP), which was developed in 2002 (FASDEP I) and then succeeded by FASDEP II in 2007. The aim of FASDEP I was to provide a holistic development policy framework for the food and agricultural sector, always maintaining growth as the core objective in order to contribute to overall economic development and poverty reduction. Utilizing the private sector as the catalyst for growth, FASDEP I broadly addressed the issues of improved access to markets, agricultural financial services, infrastructure, development of and improved access to technology for sustainable natural resource management, and enhanced human resources and institutional capacity (MOFA 2002). FASDEP II continued to focus on the agricultural sector in order to contribute to economic growth and poverty reduction, however, it zeroed in on poor farmers who were risk-prone and risk-averse. It promoted the application of science and technology to increase productivity and income diversification. Engagement of and collaboration with the private sector was still key, but also was that of other partners, such as NGOs and donors. All three programs – FASDEP I, FASDEP II and METASIP are focused on growth in the agricultural sector – with the thought process being that such growth

is effective in reducing poverty due to higher income and the further linkages it creates along the value chain, such as processing and the export market.

MOFA directed its attention to enhancing the potential of the export market by initiating in 2007 a program to help farmers export their commodities. The Export Marketing and Quality Awareness Project (EMQAP) is the responsibility of the Crop Services Divisions within MOFA, and aims to help Ghanaian producers meet production and certification requirements in order to export to the European market. Focused on pineapples, bananas, mangos, cassava and pepper, under EMQAP farmers are trained on what is needed to get the necessary certification to export. Funded by the Government of Ghana and the African Development Bank (ADB) it is a \$28.8 million (U.S.) program covering four regions in Ghana - the Central Region, the Greater Accra Region, the Eastern Region and the Volta Region (MOFA n.d. EMQAP).⁴³ The project works with twelve farmer groups, with each group having approximately fifteen to forty members. Productivity enhancement, infrastructure development (such as irrigation equipment, pack houses for grading, sorting and packing) as well as export marketing promotion are key components of the project. At its core, EMQAP aims to provide a comprehensive approach as regards standardization, in order to facilitate farmers in meeting stringent international standards and thereby increase the export earnings of agricultural products.

Complementing EMQAP is the more recent initiated Ghana Commercial Agricultural Project (GCAP), launched in 2012 and set to continue till 2019 (MOFA 2017a). Funded by the World Bank, USAID and MOFA, it is a \$145 million (U.S.) project aimed at helping smallholder and subsistence level farmers increase their agricultural productivity by addressing access to irrigation schemes, land, finance,

⁴³ For more information about EMQAP, refer to the MOFA website at: http://mofa.gov.gh/site/?page_id=729

inputs, and markets (MOFA 2017a).⁴⁴ The project covers the Northern Savannah Agro-Ecological Zone in the northern part of the country (Upper West Region, Upper East Region, Northern Region and the savannah areas of the Brong-Ahafo Region), and the Accra Plains in the Greater Accra Region, Eastern Region and the Volta Region. In both project intervention areas the focus is largely on the crops of maize, rice and soya.

MOFA has also worked with CERSGIS (Center for Remote Sensory and Geographic Information Services at the University of Ghana) and the United States Agency for International Development (USAID) to establish in April 2013 the first Ghana Agriculture Online Geographic Information Systems (GIS) Platform (CERGIS 2013).⁴⁵ The platform provides cross-sectional and GIS data collected from projects, including those of MOFA, international donors and NGOs. The aim of the platform is to provide key data - such as the locations of smallholder farms, processors, tractor service providers, warehouses / post-harvest infrastructures, market centers, and weather stations. The data should help value chain actors to make decisions that would allow them to be more competitive on the national and international market. Most data is free and at time of writing is limited to six crops: mango, citrus, maize, rice, soybean and cashew. Producers of other crops, such as tomatoes, might still find the dataset informative and helpful in terms of spatially understanding what resources are available to them depending on where they farm.

Decentralization

Ghana is located on the West African coast, surrounded by French-speaking countries – Burkina Faso, Togo, and Cote d’Ivoire. It has a total land area of 238,537 square kilometers, including 560 kilometers of coastline along the Gulf of Guinea

⁴⁴ For more information about GCAP, refer to website: <https://gcap.org.gh>

⁴⁵ For more information about the platform refer to the CERSGIS website: [http://cersgis.org/Project %20profiles.html](http://cersgis.org/Project%20profiles.html)

with a population of nearly 27 million people (Ghana Statistical Service et al. 2015: 1). The city of Accra is the administrative and political capital, and it operates a multi-party democracy with an executive president, elected parliament and independent judiciary. The country is made up of 10 administrative regions, with the Eastern, Greater Accra, and Ashanti regions constituting nearly 50 percent of the country's total population (Ghana Statistical Service et al. 2015: 1). The 10 regions are further sub-divided into 216 districts, with government administration in each district being coordinated by the District Assembly (DA) and headed by a District Chief Executive (DCE).⁴⁶

Decentralization is a system of governance based on the premise that local governments are closer to the people (i.e. improved knowledge of what a community requires) than the central government. In this regard, devolution of authority and responsibility to the local government level for the provision of public services is essential to increasing efficiency and government accountability.⁴⁷ Ghana's current legal framework for its decentralization program is its 1993 Local Government Act (Act 462). The document puts forth the District Assemblies (DAs) as the local government institution in each district with the principal authority for development plans and the provision of public goods and services - such as feeder roads, agricultural extension, and access to water and sanitation infrastructure.

There is decentralization by law in Ghana, however many districts are still dependent on funding from the national government and the donor community to fund district operational costs. Districts are allowed to generate their own funds, but it is often not on par with the amounts that are received from donors and the GoG. The District Assemblies derive their revenues from four sources, namely the District

⁴⁶ Each Assembly has "social, economic and legislative jurisdiction" over their respective local district, but a Regional Coordinating Council (RCC), headed by the Regional Minister, "coordinates and monitors the activities of the Assemblies" (GSS 2013b: 3).

⁴⁷ For more detailed discussions about decentralization and its origins, please refer to Bardhan and Mookherjee (2006) and Besley and Coate (2003).

Assemblies Common Fund (DACF), Internally Generated Funds (rates, licenses, fees and fines), GoG support for salary and program interventions, and finally donor support. According to Ghana's 1992 constitution, at least 5 percent of the total national fiscal revenue will be allocated to district governments via the DACF (Republic of Ghana 1992a: 154).⁴⁸ DACF grants are distributed among districts based on a formula, which is approved by the national parliament each year and takes into account current social and economic factors in each district. In 2009 (the first year of field research in Ghana for this thesis) the Dangme East District (where Matsekope is located) had a total revenue of 1,435,772.04 Ghana Cedis (GHC) (Dangme East District Assembly 2012: 8).⁴⁹ The district received a gross amount of 477,606.40 GHC from the DACF and 426,212.45 GHC from the national government, totaling 903,818.85 GHC - 62.9 percent of the district's total funds (Dangme East District Assembly 2012: 8). Only 200,294.52 GHC (i.e. 13.9 percent) came from Internally Generated Funds (IGF) (Dangme East District Assembly 2012: 8). The remainder of the district's funding came from donors. The districts have limited capacity to generate revenue and are still largely dependent on money from the central government and donors to operate programs.

Districts have a limited amount of say as regards disbursement of the funds at their disposal. Article 10 of Act 462, subjects each district's budget to approval by the Minister of Finance, and Article 88 of the same Act places a limit of 20 million GHC to loans acquired by District Assemblies – anything in excess of that amount requires the approval of the central government (Republic of Ghana 1993: 13 and 40).⁵⁰ Some critics of the limit argue that the sum of 20 million GHC is not a “credible

⁴⁸ As of 2008, the percentage has increased to 7.5 percent of total national revenues.

⁴⁹ The national currency of Ghana is the Cedi. One hundred Pesewas is equal to one Ghana Cedi.

⁵⁰ The sum of 20 million Ghanaian Cedis is roughly the equivalent of \$4.5 million U.S. (January 2017). Currency conversion is available at the following website: <http://www.xe.com>

benchmark for embarking on sustainable, locally developed investment initiatives” (Tettey 2006: 19). Another example of districts’ limited authority regarding disbursement of funds is the GoG’s Aid Policy of 2010-2015. The document states that the Ministry of Finance and Economic Planning “shall spearhead all negotiations with Development Partners (DP)...and shall have the responsibility of authorizing all grants that are given to individuals, organizations, Ministries, Departments and Agencies (MDAs) and any other institution in Ghana” (MOFEP 2009: 3). Centralizing tendencies continue to exist as regards financial disbursement, perhaps limiting District Assemblies’ ability to take charge of their district’s development projects.

The on-going centralization tendencies in revenue acquisition and disbursement also affect human resources capability. Article 10 of Act 462 calls for the District Assembly to “exercise political and administrative authority in the District, provide guidance, give direction to, and supervise all other administrative authorities in the district...a District Assembly shall be responsible for the overall development of the district” (Republic of Ghana, 1993: 13). However, where functions of the District Assembly might overlap with a unit of the central government, the latter usually takes charge due to more experience, and financial as well as human resources. District Assemblies, although legally responsible for the overall supervision and development plans of the district, are unable to wield authority over or “compete” resource-wise with staff of central government institutions.

Another factor at play is the District Chief Executive. The DCE is the head of the District Assembly, appointed by the President of Ghana for a two-year term, “with the prior approval of two-thirds majority of the members of the District Assembly present and voting at the meeting” (Republic of Ghana, 1993: 18). The concern is that once in office, the DCE may be more loyal to the President’s national policies than to the people of the district. Rather, popular election of the DCE by the people in the district might make him or her more accountable to the district’s communities and allow for formulation and enforcement of policy and programs that are

specifically beneficial for the district. The central government appears to remain dominant, if not at least very influential at the district level, in terms of not only revenue acquisition and disbursement, but also possible policy direction (Tettey 2006).

Ghana has put in place the basic building blocks for decentralization, however in practice the central government remains dominant at the district level. Although built on the premise that local governments are closer to the people and therefore would have better knowledge than the central government as to what a community requires, the process of decentralization has not per se provided local authorities with the needed resources to take charge of their district's development. There is disconnect between the central and district governments, with the districts often not having enough resources (revenue, human expertise) to carry out not only the national objectives of building more agro-export industries in Ghana, but also more localized, district-level development projects. However, strides have been made to address this issue. Programs such as the District Capacity Building Project from 2001-2007 (funded by Canadian International Development Agency - CIDA) and the country's National Decentralization Action Plan (2004-2009) funded by the European Union, Agence Francaise de Development, and Danish International Development Agency (DANIDA) were stepping stones in allowing District Assemblies to move closer to effectively accomplishing their responsibilities as outlined in Act 462.⁵¹

2.4: CONVERGENCE OF POLICIES

Farmers cultivating tomatoes in Ghana are affected by an international, regional and national policy context. The potential for global trade appears to be a recurrent

⁵¹ The District Capacity Building Project aimed to strengthen the capacities of local governments to manage collaboration with NGOs and private entities as regards water and sanitation projects. It focused on the Upper West, Upper East and Northern Regions. The National Decentralization Action Plan aimed at improving local level service delivery and accountability.

theme at each policy level. At the international level, trade liberalization is at play, most evident in the EPA agreed to by ECOWAS and the European Union. At the regional level the ECOWAP and CAADP are the two key framework documents to have influenced Ghana's national programs relating to the agricultural sector. Both regionally and nationally, over the past decade policy has strived for economic growth and poverty reduction via a focus on agriculture, and particularly the agro-based industry. However, there is some disconnect between the Ghanaian central and district governments, with the districts having limited resources to carry out not only the national objectives of building more agro-export industries in Ghana, but also more localized development projects.

As regards the tomato sector, tomato farming has continued to be a constant over the past decades, despite the lack of a cohesive, national program tailored specifically to bolster the production, marketing and export of fresh or processed tomatoes (i.e. paste). The establishment in the 1960s of two tomato-processing factories and one canning factory in the country (further discussed in chapter 4), coupled with the push for global trade (including the potential of agro-export industries), has encouraged tomato cultivation over the past several decades. In effect, although popularity of the tomato in the Ghanaian diet, along with a growing population has undoubtedly bolstered a need to cultivate tomatoes, it appears that the tomato sector in Ghana has been approached primarily from the international angle - rather than what is needed to first promote and develop local production, and then building on that to eventually export internationally.

CHAPTER 3: METHODS

3.1: RESEARCH STRATEGY

This thesis set out to identify and analyze the production and selling challenges encountered by tomato farmers. To achieve this I had to gain knowledge about the context in which farmers operated. Understanding that a commodity will not be cultivated if it does not have a viable market destination, I chose the value chain approach (covering the areas of input, output, geographical destination, governance and institutions). I believed this approach could provide insight about how the tomato supply chain operated from the cultivation stage to the sale of the commodity.

As noted earlier in this dissertation, value chain analysis has been conducted in many forms and for diverse purposes. It has been utilized to focus on specific actors as well as segments of the chain. Due to this diversity, there is no single, correct form for VCA (Raikes et al. 2000). The tomato value chain in Matsekope is comprised of the activities and actors involved from cultivation to the end-product that the consumer buys. But as I was focusing on identifying and analyzing farmers' challenges, I chose to center my analysis on one segment of the tomato value chain in Matsekope – from farmer cultivation to when the farmer sells the tomatoes at the farm-gate.

Ghana, like all countries in the world, does not operate in a vacuum. All countries exist within an international, regional and national context. I thus began with literature review on Ghana and its position and relations within the international arena. I moved on to the regional and national contexts, followed by related topics such as for example trade liberalization, SAPs, EPAs, agricultural development, and ultimately the theoretical underpinnings, concept, and practical uses of value chain analysis. I continued targeted literature review throughout the data collection and

analysis phases of my research to better understand and reflect upon specific topics that emerged – such as, but not limited to irrigation, post-harvest, land tenure, sanitary and phytosanitary standards, rural banking, agricultural extension services, farmer-based organizations, tomato processing, and contract enforcement.

Specific information is needed to conduct all components of VCA – input/output, geographic destination, governance and institutions. The broad nature of data needed to conduct VCA, and the fact that there are three main tomato-producing regions in Ghana, compelled me to do a single case study. A single case study was not only the most realistic and practical, but it also allowed me to obtain as much in depth information as possible from the farmers about their challenges. “Case studies involve smaller numbers of observations which may not be statistically significant, but can involve carefully structured samples. They typically have significant depth in the data created” (Sumner and Tribe 2008: 104). I focused my research on one tomato-producing village, while I conducted a lesser number of interviews in the other two tomato-producing regions. In case study research there is often the question as to whether or not there should be more than one case study – i.e. a multiple case design (Yin 2002). Being myself just one person, combined with the complexity of the VCA approach and the need to obtain in-depth information from farmers about their challenges, I deemed a single case study to be the most realistic and appropriate.

Two of the most common types of sampling are random and purposive sampling. Random sampling is when “each unit of the population has an equal probability of inclusion in the sample”, while purposive sampling is “a sample that is selected because of its availability to the researcher with some units of the population more likely to be selected than others” (Sumner and Tribe 2008: 106). I utilized purposive sampling and chose the town of Matseko as the focal point of my research. The village is characteristic of the agricultural farming sector in Ghana where farming is predominantly (90 percent) smallholder in character with most farmers making a living from family-operated farms (MOFA 2011c: 5). Moreover, Matseko is not

only characteristic of agricultural farming in Ghana, but also particular to tomato farming. There are three main tomato-farming regions in Ghana with the Greater Accra Region, and within it specifically the Ada Plains, being one of them. Matsekope is located in the Ada Plains. Moreover, my location in Accra, allowed for easier access to Matsekope than the other two tomato-producing regions, which were located further away from Ghana's capital.

3.2: DATA COLLECTION

Both quantitative and qualitative information was collected on the challenges faced by smallholder tomato farmers in Matsekope. While some of the information for VCA analysis specifically required first-hand, quantitative data from farmers (such as the input and output and geographical destination) other portions of VCA (governance and institutions) required more qualitative information. Both quantitative and qualitative information from a variety of sources besides farmers was a requisite - such as government entities, farmer-based organizations, traders, market queens, and those managing the processing factories. The quantitative approach was used to obtain quantifiable data and produce statistics. The qualitative approach was typically used to collect information that related to judgment, perception, and priorities about an issue. Limitations in cost and time made in-depth data collection from all members of the target population in Matsekope improbable. However, data that has been collected may serve as statistical inference in order to generate information that is representative of the broader relevant population.

Research for this thesis brought forth quantitative and qualitative information that I personally, directly collected from interviewees. But in order to augment the analysis and pervading discussion, I also used sources of information that I did not personally collect via interviews. These other sources of information include statistics from the GoG and international organizations, published academic articles,

official documents from the GoG, the European Union, international organizations, donors, the private sector, and non-governmental organizations.

In order to obtain a better overview of general EU-Ghana relations, I conducted in Brussels a small set of interviews with EU and ACP Secretariat officials in September 2007. My research interviews in Ghana did not start till 2009. Interviews in Ghana took place at several month intervals in 2009 and over the following two years. I started the interview process in Ghana in the capital city of Accra. From May 2009 - July 2009 I targeted the academic community, non-government organizations, international agencies, financial institutions and Makola market. My interviews with the academic community in Accra, led me to a contact at a local NGO, the Social Enterprise Development Foundation of West Africa (SEND). SEND focuses on the formulation of pro-poor policy, development policy monitoring, and livelihoods security. The NGO contact put me in touch with a primary school teacher in the village of Matsekope - Betty Sackey. In December 2009 I made a presentation to Ms. Sackey about my intended research, followed by a question and answer period. A few days thereafter she contacted the village Chief. Following a meeting between the Chief and myself - to explain the research and ask for permission to interview members of the village community - permission was granted to me by the Chief to conduct interviews with community members and farmers in Matsekope.

Ms. Sackey was able to identify and suggest to me the first set of farmers to be interviewed in Matsekope. One of the first interviews I had in Matsekope was with a tomato farmer who was also the village's lead representative for on-going work with an NGO called the Hunger Project. The Hunger Project was providing small-sized loans / credit to local farmers. This tomato farmer had a vast amount of knowledge about the farmers, and suggested other farmers and stakeholders to contact and interview. Additionally, as I started to conduct group interviews and then individual interviews with farmers, some of the farmers themselves had further suggestions as to who else I should contact for an interview. Basically I was

able to conduct new interviews based on the concept of “snowballing” – one interview led to another.

In early 2010 (January to end of April 2010) I started interviews with the broader Matsekope and Dangme East District community - i.e. Matsekope community “elders”, Dangme East District Assembly officers, the district office of the Ministry of Food and Agriculture, the Ada rural bank, the Hunger Project, farmer based organizations, Expom (located in Tema), and Matsekope farmers. Of the 44 farmers interviewed in Matsekope, 27 were individual interviews and the remaining 17 farmers participated in the group interview sessions. During this time period I also traveled to the other two tomato-producing regions in the country: the Brong Ahafo region and the Upper East region to conduct interviews with stakeholders. I returned to Matsekope at the end of July through to September 2010 when it was harvest time to interview primarily lead-boys, traders, drivers and re-visited Makola market.⁵² The last leg of interviews took place from April to July 2011 back in capital of Accra with a focus largely on GoG ministries. In total 153 interviews were conducted for the purposes of this thesis – 117 stakeholders in the Greater Accra Region (includes Matsekope, the Dangme East District and the capital of Accra), 25 in the Upper East Region, 7 in the Brong Ahafo Region, and 4 in Brussels, Belgium.

Based on the literature review, I composed semi-structured as well as close-ended questions to obtain both quantitative and qualitative information. For the farmer interview phase I first conducted a trial run with two farmers. After the trial run, the questions were subsequently amended before being finalized. All interviews

⁵² Interviews with farmers at the end of July/August and September 2010 did not take place, but rather the focus was on witnessing the inter-relationships between the lead-boys, traders and farmers. In an ideal research setting, interviews with farmers in July/August and September 2010 would have provided as fresh information as possible about the 2010 harvest season, but due to resource constraints (i.e. only one researcher), it was not possible to analyze the lead-boy-trader-farmer dynamic as well as do in-depth one-on-one interviews with farmers during the same time period. Consequently, all one-on-one interviews with farmers were done in the first quarter of 2010, inquiring about the 2009 season.

entailed semi-structured questions to elicit discussion and greater insights about an issue. Interviewees could provide answers that they considered important without restrictions. They were directed by a question, but flexibility was ensured via the open-ended nature of the question to permit follow-up and discussion to the initial answers provided. The close-ended questions were posed with the aim of obtaining numerical data. Individual interviews with farmers took approximately two hours to complete, whereas interviews with other entities took between one to one and a half hours. Some interviewees were interviewed twice in order to obtain more information about an issue raised or to clarify information obtained in the initial interview.

Before commencing each interview, I introduced myself and provided a brief overview of the research and why the interview was taking place. I provided assurance to the interviewee that his/her answers would remain confidential. Then I asked the interviewee if he/she had any questions or concerns, and if he/she would agree to do the interview. If they stated that they would like to go ahead with the interview, then I would commence with my interview questions. The interviews were conducted in English, however in a few cases with farmers, Ms. Sackey was present when translation was needed. I posed the questions and listened to answers and wrote them down. With the open-ended questions, I pursued further discussion. Throughout the interview, I asked clarifying questions to be sure as much as possible that the correct information was being written down. At the end of each interview, I thanked the interviewee for his/her time and asked if there were any further questions that he/she might have now that I had asked all my questions.

Field observation was another key data collection method that I utilized during my research. Such observation was key to ensure that information being received from interviewees was not being misinterpreted. Moreover, observation also allowed me to notice exchanges, activities that were not necessarily highlighted in the interviews. Each of the farms were visited and in some cases, prior to interviewing farmers, first-hand observation was used to better understand the cultivation

process, beginning with the seedling preparation phase. Similarly, first-hand observation was done when I visited the three tomato processing factories – in the Pwalugu (Northern Star Tomato Company), Wenchi (Afrique Link Limited) and Tema (Expom), irrigation sites in the Ada Plains and Upper East Region (Tono and Vea), the selling of tomatoes at the farm-gate and outdoor Makola market (in Accra). In all cases I wrote field notes, and asked for permission to take pictures of the farming practices, the factory premises, irrigation infrastructure, and markets.

3.3: DATA ANALYSIS

The day after an interview or first-hand observation, I typed the hand-written notes into a word document summary, with quantitative information being kept track of in a separate spreadsheet. The word document summaries as well as quantitative data were reviewed to check for main concepts / themes relevant to the research as well as any emerging patterns that were becoming evident. I searched for relationships between actors in the chain, what, and who guided those relationships. I utilized my understanding of the literature review to help identify concepts, themes, and patterns.

Most of the interviews, especially those with farmers, provided both quantitative and qualitative information. The quantitative data obtained from farmers was largely utilized to uncover the input, output and geographic destination. The other parts of value chain analysis – governance and institutions – relied heavily on some of the open-ended questions and answers received not just from farmers, but also from other actors in the value chain, such as traders, lead boys, and the processing sector. Where there was doubt about the accuracy of information, I returned to the interviewee for clarification. My requested clarifications were not limited to quantitative data, but also often referred to qualitative information obtained from the open-ended questions. However, there always remains a margin of error in the quantitative data, especially since few of the farmers (4) kept written records on input and output.

The interviews with 44 farmers in Matseko were divided into individual and group interviews. The aim of the group interviews was to obtain a broad overview of the main issues affecting the day-to-day work aspects of farmers, whereas the individual interviews provided more in-depth information (and more quantitative data) on the same issues. Consequently, the chapter on “Input, Output and Geographic Area” utilizes the specific quantitative input and output data obtained from the 27 individual interviews, while the governance analysis portion (chapters “A Producer or Buyer Value Chain?” and “Uncovering Multiple Forms of Governance”) incorporates information obtained from all 44 farmers in Matseko.

3.4: QUALITY OF RESEARCH

A key element when evaluating research is the generated quality of the information. One of the ways to ensure quality of research is to incorporate multiple information sources. Combining two or more data collection methods allows the researcher to have more evidence to explain the results of the research (Johnson 1997). By combining multiple data sources researchers can also overcome bias that might come from utilizing only a single source.

The interviews with farmers, although they comprised a large portion of the research, were accompanied by interviews with other stakeholders along the value chain. A total of 153 interviews were conducted, of which 44 were interviews with farmers in Matseko. Each of the interviews not with farmers still provided pertinent information and viewpoints about the tomato sector. Research also took the form of direct observation (such as observing cultivation practices and the sale of tomatoes at the farm-gate), and review of documents from the GoG, the academic community, research entities and NGOs. Hand-written notes of all the interviews, locations visited, and direct observations, as well as photographs were kept to establish a chain of evidence.

To corroborate as much as possible farmers' statements and the quantitative data in the input and output sections, where possible, comparisons were made with national GoG and international organizations' statistics. Initially, in an effort to cross-reference farmers' quoted costs, I visited local market stores to find out the prices of different products. I went to three out of the four GAIDA registered Agri-Input dealers in Kasseh.⁵³ Kasseh is where most of the farmers interviewed said that they bought their input supply products. It is a town that is approximately a 10-15 minutes drive away from Matsekope. Visiting the local stores provided a broad overview of the price range, but for some products price verification was easier than for others. For example, in the case of fertilizer the prices were quite uniform. YARA (NPK 15-15-15) fertilizer, which was most often used by the case study farmers, was repeatedly available in 50-kilogram bags for 50 GHC per bag.⁵⁴ In the case of seed and agro-chemicals the prices were not as homogenous. Over the course of the 3 stores, I counted 27 different types of agro-chemicals (pesticide, insecticide, herbicide and fungicide) all ranging in container size and prices, and 5 different types of seed also available in varying sizes of containers and prices (see Figure 2). However, information on local market prices for inputs was only a first step to cost verification. Exact cost verification required not only local market prices. It also necessitated information on which particular brand the farmer used, the unit price of that brand, the number of units bought, and importantly how the product was utilized during cultivation. This would need to be done with each farmer for each input supply product that was bought on the market (i.e. fertilizer, pesticide, insecticide, herbicide, fungicide, seed, and tools). Some farmers, although they did purchase locally, did not always purchase from one particular store, but sometimes via a contact or they obtained their input via several stores. The detailed process required resources beyond what was available with me being only one researcher. Instead, to verify the fieldwork sample input costs and output figures, comparisons

⁵³ GAIDA is the Ghana Agri-Input Dealer Association established in 2004 as the national body of agricultural input dealers in Ghana.

⁵⁴ "NPK 15-15-15" refers to the percentage combination of Nitrogen (N), Phosphorus (P) and Potassium (K) in the fertilizer.

were made where possible with international and national figures, especially those coming out of Ghana's Ministry of Food and Agriculture.

Figure 2: Example of various input supplies available on the local market



Source: Picture taken in local store (in Kasseh) by author during fieldwork (2010).

The information obtained from this research is directly reflective of the case study sample in Matsekope. However, the village is in one of the three main regions cultivating tomatoes in the country and is typical of tomato farming in Ghana (i.e. smallholder in nature). It should therefore provide a frame of reference for the national state of play in this sector.

CHAPTER 4: THE TOMATO SECTOR IN GHANA

Tomato farming in Ghana is considered to be one of low productivity and high cost, with the sector also being unable to successfully establish a national tomato processing industry (Robinson and Kolavalli 2010c; Monney et al. 2009; Kufuor 2008; Issah 2007; Adu-Dapaah and Oppong-Konadu 2002). Broad, national programs such as the Food Production and Food Distribution Corporations, as well as the Vea and Tono dams built in the Upper East region, were established by the GoG to help the agricultural sector as a whole. GoG encouragement to farm tomatoes specifically came by the way of the establishment in the 1960s of two tomato processing factories and one canning factory to make and package paste. One processing factory was located in Pwalugu (Upper East Region), the other in Wenchi (Brong Ahafo Region), and the canning factory in Nsawam (Eastern Region). The overall aim was that the factories would generate demand for tomatoes and thereby encourage their cultivation on a national scale.

During the 1980s and 1990s as part of the ERP/SAP the Ghanaian government embarked on privatization, deregulation, and reduction in tariffs. It reduced government support for the tomato processing factories and relaxed the restrictions on the imports of tomato paste. As mentioned earlier on in this thesis, according to the international Food and Agriculture Organization (FAO), paste imports have surged over the past several decades (FAO 2017c). While some of the increase in paste imports can be attributed to an increasingly inter-connected, global, trading world, various scholars have noted that it is linked to trade liberalization and the large subsidies (300 million Euro per year in direct subsidies and several millions more in indirect subsidies) that EU farmers obtained for production and export of their own tomato products (Kohr and Hormeku 2006; Robinson and Kolavalli 2010c). An environment was created where competition in the Ghanaian tomato paste sector increased substantially, with the EU penetrating the market. At the start

of the new millennium in 2000, of the total 13,051 tonnes of tomato paste imported into Ghana, Italy led the way with 10,194 tonnes (FAO 2017d).⁵⁵

Despite the historically strong position of the EU in the Ghanaian tomato paste market, recent FAO statistics demonstrate that the bulk of paste imports are no longer coming from the EU. Of the 109,513 tonnes of tomato paste that Ghana imported in 2013, 72,901 tonnes came from China (FAO 2017d).⁵⁶ Even during 2009, 2010 and 2011 when fieldwork research for this thesis was being done, paste imports into Ghana increased, but most of those imports were coming from China, followed by the collective EU countries, and then the United States (FAO 2017d).⁵⁷ According to FAO statistics, China started exporting tomato paste into Ghana in 2001 with a mere 299 tonnes, compared to the leading country at that time Italy, which exported 12,683 tonnes (FAO 2017d).⁵⁸ China is today by far the global leader in regards to the amount of tomato paste that is exported to and entering Ghana.

4.1: TOMATO PRODUCING REGIONS IN GHANA

There are three main tomato-producing regions in Ghana, with each one being in a different agro-ecological zone. The three tomato-producing regions are: the Upper

⁵⁵ More information about the import and export of tomato paste (disaggregated per country) is available at the FAO website at: <file:///Users/soju72/Downloads/8ff434b3-e210-4831-bd62-d8cd3b114a89.xls.html>

⁵⁶ Ibid.

⁵⁷ Ibid.

According to the FAO website:

a) In 2009 the EU collective is responsible for 18,649 tonnes of imports, China for 25,699 tonnes, and the United States for 1,442 tonnes.

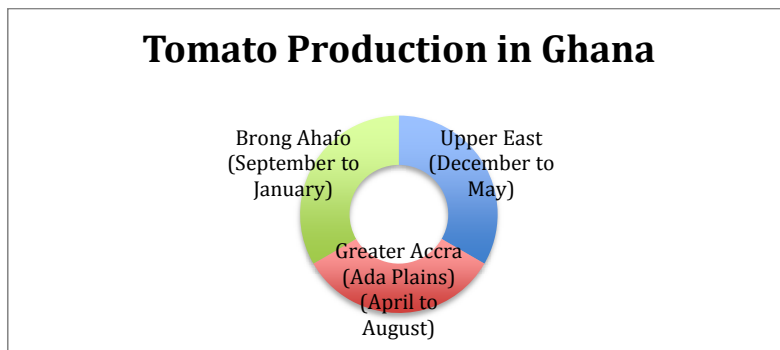
b) In 2010 the EU collective is responsible for 22,230 tonnes of imports, China for 43, 826 tonnes, and the United States for 530 tonnes.

c) In 2011 the EU collective is responsible for 14,313 tonnes of imports, China for 77,059 tonnes, and the United States for 278 tonnes.

⁵⁸ Ibid.

East Region (located in the Northern Savannah agro-ecological zone) bordering Burkina Faso, the Greater Accra Region (located in the Coastal Savannah agro-ecological zone), and the Brong-Ahafo Region (located in the Transitional Agro-ecological zone).⁵⁹ Tomato production in Ghana is seasonal (see Figure 3). Within the calendar year different regions of the country produce tomatoes at different times – largely due to the dependence on rain for irrigation purposes. In the Upper East Region, the tomato season (from seedling preparation to harvest) runs from December to April/May. In the Greater Accra Region the tomato season runs from April to July/August, and the tomato season in the Brong-Ahafo Region takes place from September to December/January.

Figure 3: Seasonality of tomato production in Ghana



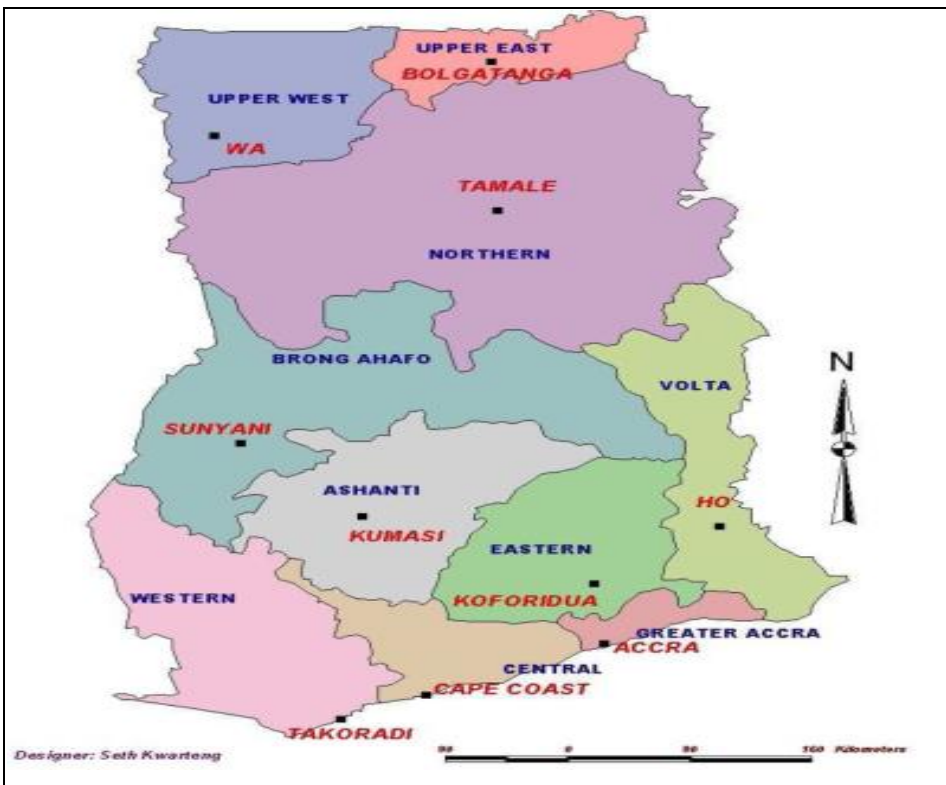
Source: Author's diagram based on interviews (2010, 2011) with farmers and Ministry of Food and Agriculture (MOFA) officials in all three regions.

Tomato production in each of the three regions allows for a national supply of tomatoes at local markets for most, but not all of the year. When tomatoes are in-season in a region, customers are able to obtain their tomatoes at a local market where locally cultivated tomatoes are sold. During the off-season in a region, marketplaces sell tomatoes that are obtained in either one of the other two tomato-

⁵⁹ In Ghana there are five main agro-ecological zones - Rainforest, Deciduous Forest, Transitional Zone, Coastal Savannah and Northern Savannah - defined by climate, natural vegetation and soil. The Northern Savannah is further divided into Guinea Savannah and Sudan Savannah.

producing regions in Ghana, or as research for this dissertation has shown, the neighboring country of Burkina Faso. No single region in Ghana is able to supply tomatoes all year-around. Rather, as will be discussed further on in this dissertation (namely chapters 5, 7 and the concluding chapter), the process of ensuring that there are tomatoes available at a market during the in and off-season, is complex and highly influenced by the traders who travel to the various tomato-producing regions and are responsible for bringing the tomatoes to the marketplace.

Figure 4: Map of Ghana – Regions



Source: International Atomic Energy Agency (IAEA). 2012. "Country Nuclear Power Profiles 2012 Edition: Ghana." Last updated 2012.

The Upper East Region

Within the tomato-producing regions of Ghana, only one of them, the Upper East Region, has access to formalized large-scale irrigation. According to the Ministry of Food and Agriculture, 0.4 percent of the agricultural land area in Ghana is under irrigation (MOFA 2013: 2). In the Upper East Region there are two reservoirs – Veve and Tono, which were established with the aim of furthering agricultural development in the region. Veve was built in the early 1960s while Tono was built between 1975 and 1985. According to the Ghana Statistical Services (GSS), these reservoirs are used for the irrigation of crops and livestock necessities in sixteen neighboring villages, reaching approximately 6,000 smallholder farmers (GSS 2013a: 4). These reservoirs have contributed to year-round farming initiatives, however, the sites are not sufficient to allow for further expansion of water resources to other farmers. Further irrigation in the region is found in hand pumps (boreholes) and hand-dug wells (GSS 2013a). The latest ten-year (2003-2012) average rainfall for the Upper East Region was 916 millimeters (mm) per annum, which was nationally on the low side (MOFA 2013: 6). The average rainfall throughout the various regions of Ghana over this ten-year period ranged from a minimum of 768 mm to 1,449 mm (MOFA 2013: 6). The Irrigation Company of the Upper Region (ICOUR) is the government entity managing the two irrigation schemes.

The majority of the population in the Upper East Region lives in rural communities and is engaged (i.e. working for money) in the agricultural sector.⁶⁰ There are a total of 1,046,545 people living in the region with 826,899 people (71.9 percent) living in rural localities (GSS 2013a: 27). In the region 83.7 percent of the households are

⁶⁰ Localities with populations of 5,000 or more are classified as “urban”. Anything below 5,000 people is classified as “rural” (GSS 2013a: 27). The statement “engaged in the agricultural sector” refers to terminology used in the most recent Population and Housing Census (2010) conducted by the Ghana Statistical Services, where individuals are working in “crop farming, tree planting, fish farming and livestock rearing in the twelve months before the time of the census”. (GSS 2013a: 130).

engaged in agricultural activities, with the majority of that engagement being in crop farming (53.7 percent) and livestock rearing (46 percent) (GSS 2013a: 130 and 133).⁶¹ The main agricultural crops grown are millet, groundnuts, rice, maize, and beans comprising 82.3 percent of all crops cultivated in the region (GSS 2013a: 134). Another 10.3 percent of crops are soya beans, sorghum, okro, pepper and onion, while the remaining 7.4 percent of crops includes tomatoes (GSS 2013a: 134).

The GoG is keen to hone in on the potential of tomatoes grown in the Upper East Region, especially due to an already existing tomato-processing factory in Pwalugu. Building of the factory (Northern Star Tomato Company – NSTC) was finished in 1967 with the aim of encouraging production of tomatoes and possible export to the international market. The factory closed down in the 1980s and in 2006 was refurbished by the Ministry of Trade and Industry as part of the government’s District Industrialization Policy (Robinson and Kolavalli 2010c). A strong case has been made in the Ghanaian public arena to rebuild Ghana’s internal capacity for the production of fresh tomatoes and the processing of tomatoes for tomato paste.⁶² The factory is fully owned by the Government of Ghana, under the direction of the Ministry of Trade and Industry. NSTC was refurbished to produce and package tomato paste in bulk, which would then be sent to the company Expom (located in the city of Tema in the Greater Accra Region), for further processing and retail packaging. Currently there is only one buyer of the tomato paste coming out of NSTC – Expom - and the price is negotiated yearly between Expom and MOTI. Meanwhile, the price for the raw tomatoes that NSTC needs is negotiated between NSTC (de facto MOTI) and the local farmers. NSTC does not currently operate at full capacity, but rather at time of writing, approximately 4 months out of the year. Inconsistency in the supply of tomatoes, as well as infrastructural repairs are the primary reasons

⁶¹ To be qualified as an “agricultural household”, at least one member of the household had to be engaged (i.e. working for money) in agricultural activity (GSS 2013a: 130).

⁶² For literature on the need to expand Ghana’s agricultural productivity, see Lambrechts et al. (2005); Third World Network (2008); Asenso-Okyere (2001); and Asuming-Brempong and Asuming Boakye (2008).

as to why it does not operate for the entirety of the year.⁶³ At full capacity the factory has the ability to process 500 tonnes of tomatoes per day (NSTC 2010:1).

There is cross-border tomato trade between the Upper East Region and Ghana's neighboring country, Burkina Faso. Ghana imports more tomatoes from Burkina Faso, than it exports to that country. The latest FAO figures note that 5,929 tonnes of tomatoes were imported from Burkina Faso into Ghana in 2013, while that same year, 5 tonnes of tomatoes were exported from Ghana to Burkina Faso (FAO 2017e).⁶⁴ Farmers in the Upper East Region have complained publicly in the press that the bulk of the imported tomatoes from Burkina Faso are sold to outdoor markets in the Upper East and neighboring regions (i.e. Upper West Region and Northern Region) and thus hinder local farmers' livelihood. However, Ghanaian traders are justifying their trips to Burkina Faso by claiming that the quality and storability of the Burkinabe tomatoes are better for the fresh market. According to an IFPRI study, tomato farmers in Burkina Faso are able to obtain higher yields due to "intensive cultivation of small plots, cultivation on dam catchment areas that are highly fertile, and fewer years of cultivation on the same plot resulting in lower incidence of soil borne diseases" (Robinson and Kolavalli, 2010a: 15). The initiation of the cross-border trade started back in 1996, when there was a poor harvest in the Upper East Region causing a shortage of tomatoes. Traders thus started going to neighboring Burkina Faso and their presence there encouraged more Burkinabe farmers to grow for the Ghanaian market. A crop disease outbreak in the Upper East

⁶³ Based on interviews with NSTC staff.

⁶⁴ For 2013 a total of 5,944 tonnes of tomatoes were imported into Ghana, with 5,929 tonnes coming from Burkina Faso. Of the remaining 15 tonnes imported, 10 came from The Netherlands, 3 from Egypt, and 2 from Spain. As regards exports, Ghana exported a total of 29 tonnes of tomatoes in 2013, with 5 tonnes going to Burkina Faso and 24 tonnes exported to Sierra Leone (FAO 2017e).

More information about the import and export of tomatoes (disaggregated per country) is available at the FAO website at: <file:///Users/soju72/Downloads/e1f4e5f8-9102-4ae3-a0b2-8d32e467dd6f.xls.html>

Region in 2003 further solidified the cross-border trade. Since then, production of tomatoes in the Upper East has been variable, largely due to farmers' concern and reluctance to farm tomatoes due to competition from Burkina Faso. Hence, although the Burkinabe tomatoes are not destined for the processing factories in Ghana, the situation does most directly affect the amount of fresh tomatoes produced in the Upper East Region.⁶⁵

The Greater Accra Region

Another main tomato-producing region in Ghana is the Greater Accra Region – in particular the Ada Plains area. The Ga-Dangme is the predominant indigenous ethnic group in the region, with the main ethnic languages being Ga and Adangme (GSS 2013b: 3). Largely dependent on rainfall for farming irrigation, the average rainfall in the region from 2003-2012 was 768 mm, which was the lowest of all the regional averages in the country (MOFA 2013: 6). Surprisingly, there are no formalized, large-scale irrigation schemes in this region such as in the Upper East Region. This may be because agriculture is not as common in the Greater Accra Region as in other regions of the country. The highest proportion of the employed population (35.6 percent) in the region works in services and sales (GSS 2013b: 78). According to the latest national census (2010), the region is largely an urban-based population. Of the total 4,010,054, people living in the region, only 480,901 are rurally located (GSS 2013b: 22; MOFA 2011c: 7). Most of the agricultural activity takes place in the Dangme West and Dangme East districts, with 49.8 percent and 37.3 percent of the households respectively, employed in agriculture (GSS 2013b: 94). There are a total of 121,070 farms in the Greater Accra Region of which the majority (80.2 percent) are engaged in crop farming, growing “about 64 different crops” with cassava, chili pepper, maize, tomatoes and carrots being the most prevalent (GSS 2013b: 99).

⁶⁵ Based on research interviews in the Upper East Region, the Burkinabe tomatoes bought by Ghanaian traders are sold to the fresh market in Ghana and not the processing sector.

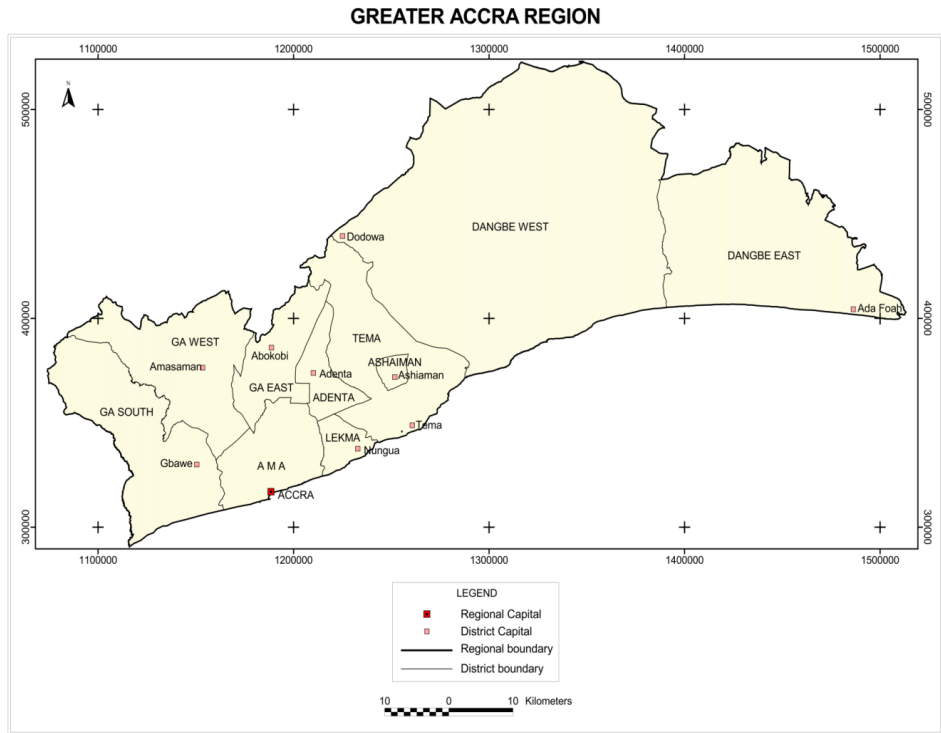
There also exists a tomato-processing factory (Expom), by the seaport city of Tema, just outside the capital city of Accra.⁶⁶ Tema is the leading industrial area in the country. Expom, headquartered in Italy, is a private company (previously called Trusty Foods Ltd), which was established in 2002 “to supply the West African markets with tomato paste” (Robinson and Kolavalli 2010c: 1). Although a Managing Director and a Deputy Managing Director are located in Tema, all procurement activities are controlled by the headquarter office in Italy. Expom in Ghana employs between 350-400 people depending on the season. As mentioned earlier on in this chapter, Expom works with NSTC in the Upper East Region to process and package tomato paste. Expom also sources tomatoes from neighboring districts in the Greater Accra Region, however the large majority of the tomato paste that it packages and sells is imported tomato paste from Italy and China. Fresh tomatoes from Ghana comprise just under 10 percent of Expom’s tomato inputs.⁶⁷ At full capacity, the factory processes up to 300 tonnes of tomatoes per day.⁶⁸ The company works with 40 distributors who sell to retailers nationally and internationally. There are some international food retailers present in Accra, with among the largest being the South African retailer “Shoprite” and the discount retailer “Game”, also headquartered in South Africa. Exports of Expom’s tomato paste are largely destined for neighboring countries in the region. There are various brand names under Expom including “Italia”, “La Perla”, “Bonne Mama”, “La Bianca” and “Wealgest”.

⁶⁶ Since concluding fieldwork, another tomato processing factory has been set up in Tema, starting operations in the latter half of 2015. It is privately owned by Conserveria Africana Ghana Limited. Similar to Expom, it currently relies mostly on the importation of concentrated tomato paste, which it cans and packages. The company is looking to invest some 50 million GHC into its operations in Ghana over the next two years, with the expectation that in a few years the company can produce tomato paste using locally produced tomatoes (Larbi 2015).

⁶⁷ Based on interview with Expom representative. According to a recent IFPRI study, “currently fresh tomatoes from Ghana comprise a mere 7 percent of Expom’s tomato inputs, with the rest coming from bulk tomato paste imports” (Robinson and Kolavalli 2010c: 1).

⁶⁸ Based on interview with Expom representative.

Figure 5: Map of the Greater Accra Region in Ghana



Source: Ghana Statistical Service (GSS). 2013b: 1.

The Brong Ahafo Region

Brong Ahafo is the third region where tomato farming is done with the potential for processing due to the existence of a tomato-processing factory in the area - Afrique Link Ltd.⁶⁹ Unlike the Upper East Region, it does not have large-scale irrigation

⁶⁹ Since concluding fieldwork, an agro-processing factory was established in the town of Techiman within the Brong Ahafo Region. With initial funding coming from the GoG, it was set-up to be a tomato-processing factory. However, due to the inavailability of sufficient raw materials, combined with high energy costs, it was put out for bids and privatized. It became semi-operational at the end of 2014 and re-named the Techiman Processing Complex Limited. It has a production capacity of 40 tonnes per day, producing an array of commodities, including mango and watermelon concentrate (Business World 2014).

schemes established for the purpose of farming. Similar to the Greater Accra Region, it is largely dependent on rainwater for cultivation practices. The average rainfall in the region from 2002-2013 was 1,219 mm, which was on the high end for the regional averages in the country (MOFA 2013: 6). With a total population of 2,310,983 agriculture is the dominant sector in the region with 68.5 percent of the households working in agriculture – largely crop farming (96.6 percent) (GSS 2013c: 30, 118 and 122). It is the third largest producer of cocoa in the country and most of the country’s cashew products are produced in the region (GSS 2013c: 12). The main food crops grown are maize, cassava, plantain, yam, cocoyam, rice and tomatoes.

Afrique Link Ltd (ALL) in the region, unlike NSTC, is not owned by the government, but rather privately-owned and operated.⁷⁰ However, similar to NSTC it began to be built under Nkrumah’s regime in the 1960s as part of that administration’s overall development plans. Partially operational for over a decade, it shut down in the 1980s, re-opened in 2005, and shut down again in 2007 after being unable to obtain the quality and adequate production amounts of tomatoes needed to operate at full capacity. At full capacity, ALL is able to process up to 200 tonnes per day (Robinson and Kolavalli 2010c: 9).⁷¹

4.2: SOURCING DIFFICULTIES

A common thread among all three tomato-processing factories in Ghana is that they have difficulty with sourcing enough fresh tomatoes from Ghana. Not one of the factories is able to procure enough tomatoes within Ghana to operate solely on the usage of Ghanaian tomatoes on a year around, full-time basis. Looking at the maximum, tomato-processing capacity of each factory (NSTC at 500 tonnes per day,

⁷⁰ Afrique Link Ltd has also locally been referred to as the “Wenchi Tomato Factory”.

⁷¹ Total processing amount of 200 tonnes per day was also mentioned in interview with ALL representative.

Expom at 300 tonnes per day, and ALL at 200 tonnes per day), the total capacity of all three factories is 1,000 tonnes of tomatoes per day. In a year's time that amounts to 365,000 tonnes of tomatoes should all three factories be fully operational all year. In 2013, Ghana produced a total of 340,218 tonnes of tomatoes (FAO 2017b).⁷² It exported 29 tonnes of tomatoes, while importing 5,944 tomatoes, resulting in 346,133 tonnes of tomatoes being available in Ghana once national production, import and export have been taken into account (FAO 2017c).⁷³ This amount is not enough to allow all the factories to be fully operational, not to mention that it does not yet take into account the local demand for fresh tomatoes destined for the outdoor markets. Additionally, it is highly unlikely that all the tomatoes currently being produced in Ghana are suitable for the processing sector.

In 2009 an IFPRI survey accumulated data from the three main tomato-farming regions in Ghana (Greater Accra, Brong Ahafo and the Upper East). The survey found that almost two-thirds of famers interviewed had yields of less than 10 tonnes per hectare (Robinson and Kolavalli 2010c: 3). MOFA national statistics note that the national average yield for tomatoes in 2010 was 7.5 tonnes per hectare – and the ministry noted that it was the exact same figure in 2009 (MOFA, 2011c: 12; MOFA, 2010a: 16). These Government of Ghana statistics are basically supported by United Nations FAO figures, which place tomato yield in Ghana at 7.2 tonnes per hectare for both 2009 and 2010 (FAO 2017b).⁷⁴ As mentioned in the introductory chapter of this dissertation, such figures are not only far below the FAO recommendation of what is considered a viable commercial yield, but also below the yield figures of various other tomato-producing countries at the international level as well as within the regional hemisphere of ECOWAS.

⁷² Refer to FAO website at: <http://www.fao.org/faostat/en/#data/QC>

⁷³ Refer to FAO website at: <http://www.fao.org/faostat/en/#data/TP>

⁷⁴ Refer to FAO website at: <http://www.fao.org/faostat/en/#data/QC>

While ALL and NSTC infrastructure was already being built during Nkrumah's presidency, the current sourcing difficulties beg the question of why the decision would be made to establish Expom in Ghana. A key reason may be that Expom is located in a "free zone" in Tema. In 1995 the Government of Ghana passed the Free Zone Act (Act 504) to encourage investment in the country. The Act allows, via a license permit from the Free Zone Board, the establishment of a "free zone enterprise". Act 504 stipulates that the Board be chaired by the Minister of Trade and Industry, and be comprised further of 8 other members who are appointed by the President in consultation with the Council of State. Four members of the board have to be from the private sector. Establishing a "free zone enterprise" provides the following advantages: i) exemption from all direct and indirect taxes and duties (including VAT and excise duties) pertaining to imports for production purposes in the free zone; ii) exemption from the payment of income tax on profits for the first 10 years of operation and a maximum income tax of 8 percent after the first 10 years; iii) exemption from withholding tax on dividends arising from investments in the free zone; and iv) a foreign investor may hold a maximum of 100 percent of the shares in any free zone enterprise (Republic of Ghana 1995; Ghana Free Zones Board 2012). Additionally, the Free Zone Board operates as a "one-stop-shop" by assisting applicants to obtain any necessary licenses and permits in order to become fully operational. Even if Expom cannot obtain the tomato paste it needs from tomatoes within Ghana, the Free Zone Act plays a key role in providing certain tax benefits so that business in Ghana is still profitable for the company should it import paste.

Since all three factories have had difficulties with obtaining enough tomatoes nationally to operate cost-efficiently, they are consequently looking into other processing opportunities. While Expom is importing more tomato paste, ALL as well as the NSTC are focusing on producing other tomato-derived products such as chopped tomatoes, or the possibility of perhaps processing other fruits when it is

not the tomato season.⁷⁵ The factories are primarily concerned with cost-effective processing. Each of the factory representatives interviewed noted that key to the successful operation of any factory is consistent, efficient, and high-quality supply of the raw material – in this case the tomato. In this respect, both NSTC and ALL have raised the idea of establishing farms on factory land, to eliminate the cost of transportation and allow for a closer working relationship between the factory and the farmer – one where the factory and possibly GoG agricultural extension agents could share the responsibility of providing input supply materials and technical support (such as production protocols) in order to ensure adequate yields for processing. The challenges though are obtaining enough funding to not only start such a program, but to also be able to guarantee a consistent price to farmers, as well recruiting enough farmers willing to put their trust in the factory and relocate to the factory lands to participate in the new venture. At present, Ghana is not producing enough tomatoes to have all three tomato-processing factories operate at full capacity all year should they rely solely on tomatoes produced in Ghana. This brings forth the important topic of cultivation and what the standard practices are in Ghana for producing tomatoes.

4.3: THE BASICS OF CULTIVATION

A tomato season (from cultivation to harvest) can take up to five months out of the year. Tomatoes produced in Ghana go through the following basic cultivation procedures: nursery (seedling) preparation, main farmland (soil) preparation, transplantation, weeding, and ultimately harvesting. In addition to these procedures the application of fertilizer, other agro-chemicals (pesticides, insecticides, fungicides, herbicides), and water is paramount at different intervals throughout the process (see Figure 6).

⁷⁵ Based on interviews with representatives from each of the three factories and MOTI.

Figure 6: Basic cultivation stages of tomatoes



Source: Author’s diagram based on interviews (2010, 2011) with farmers in Matsekope and MOFA officials in both the Dangme East District and the capital city of Accra.

In Ghana there exists legislation issued by the Ghana Standards Authority (GSA) as regards to what qualifies as a fresh tomato that can be sold on the national or international market - GS 922 of 2007. There is only one, standard, legislation for tomatoes – it does not distinguish between tomatoes destined for the outdoor market or those cultivated for the processing sector. Based on the United Nations Economic Commission for Europe (UNECE) standard for fresh tomato (FFV-36: 2000) it outlines specific requirements including cleanliness, limited defects / damage to the skin, necessary color, shape, and freedom of pests and contaminants. (GSB 2007c: ii).⁷⁶ However, GSA does not specifically outline how these standards are to be achieved. GSA is working with MOFA to disseminate more knowledge about farming practices, however, how to cultivate a tomato is knowledge that is still largely passed along within farming families, with irregular government extension services augmenting this vocation.⁷⁷

The MOFA office in the Dangme East District refers to a set of best practices that farmers are encouraged to utilize when farming.⁷⁸ According to best practices, the

⁷⁶ References are cited as “GSB” (Ghana Standards Board), since the publication was printed in 2007, before the entity changed its name to the Ghana Standards Authority (GSA).

⁷⁷ More information on standards and in particular the GSA standard for fresh tomatoes is available in chapter 6 (A Producer of Buyer-Driven Value Chain?) and chapter 7 (Uncovering Multiple Forms of Governance).

⁷⁸ “Best practices” refers to a United States Agency for International Development (USAID) pamphlet on tomato cultivation developed under its Trade and Investment Program for Competitive Export Economy – TIPCEE (2005-2009), and was referred to by MOFA officials

following steps are to be taken to ensure the best quality tomato. Farmers commence cultivation by preparing the nursery soil. The nursery (seedling) soil should be approximately 15-20 centimeters (cm) in depth and no more than approximately 1m wide and a few meters long. The nursery bed is then sterilized, which is done by moistening the soil with some water and then covering it with straw and lighting it on fire. Thereafter, the surface is leveled and the seedlings sown into the soil at intervals of about 2 cm apart from each other, and each row of seeds being approximately 10-15 cm apart. The seeds should not be simply scattered over the soil as this might lead to dense sowing and limited space for the seedlings to grow. It can take anywhere between four to five weeks (depending on the type of seed and further input supply used) before the seedlings are ready to be transplanted onto the main farmland (see Figure 7). Before transplantation, the farmland soil is prepared with fertilizer and ploughing to allow for a soil that is fine and uniform. The soil is irrigated, but not heavily – rather just enough so that it is moist. Once the farmland soil and the seedlings are ready then transplantation can occur. The planting must take place with enough space between the seedlings – approximately 25-30 cm. Some farmers erect stakes to help the plants grow upright, before the roots start to develop. Weeding takes place regularly in addition to the use of agro-chemicals (pesticides, insecticide, fungicide) and irrigation. Anywhere between 16 and 20 weeks the harvest takes place, with tomatoes being best to pick right about the time when they are changing color (see Figure 8).

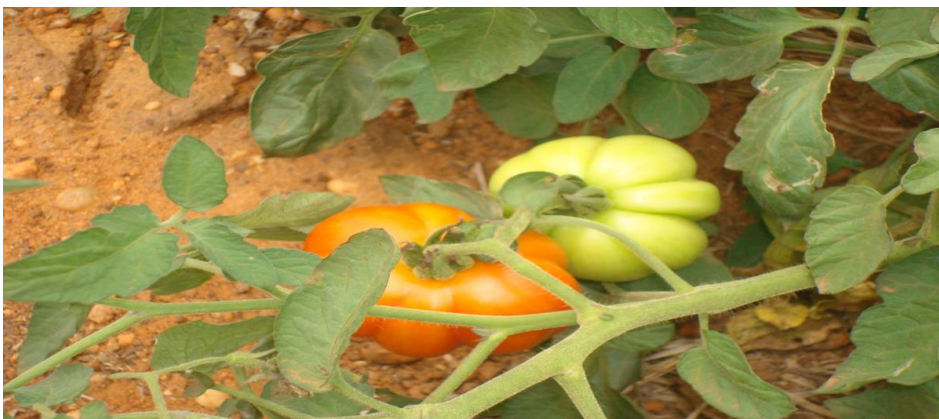
during interviews. For more information about TIPCEE, please refer to the USAID document (2009) in the References section.

Figure 7: Seedling stage



Source: Picture taken in Matseko by author during fieldwork (2010).

Figure 8: Harvest stage



Source: Picture taken in Matseko by author during fieldwork (2010).

There are a wide variety of tomato seeds available on the Ghanaian market today – Techiman, Dogobum, Laurano, Pectomech, Nimagent F1, to name a few.⁷⁹ According to the International Food Policy Research Institute (IFPRI) 2009 three-region (Upper East, Brong Ahafo and Greater Accra) study surveying 95 farmers, there were 10 types of seed being utilized by farmers across the three tomato-producing

⁷⁹ Based on fieldwork interviews with farmers in all three tomato-producing regions in Ghana and officials from ICOUR and MOFA.

regions (Robinson and Kolavalli 2010a) (see Table 1). The most variation in type of seed utilized was in the Greater Accra Region. The variety of seeds have been introduced into Ghana via various means over the years – mainly by importation from other countries, but also by processing companies when working with farmers on a trial or contract basis.

Based on fieldwork interviews with farmers in all three main tomato-producing regions of Ghana, as well as officials from the Irrigation Company of the Upper Region (ICOUR) and MOFA, of note is that there is some overlap between the seeds identified via fieldwork, with the seeds identified in the IFPRI study. In the specific case-study of Matseko, the following seeds were mentioned during interviews as having been utilized: Techiman, Dogobum, Laurano, and Nimagent F1. In the Upper East and Brong Ahafo regions the following seeds were mentioned: Pectomech, “No Name”, Laurano 50, Laurano, Saint Ruth, Unigen, Tropomech, Rio Grande, Burkina, Romne F1, Paul, Roma VF, and Yaqui.

Table 1: Variety of tomato seeds utilized by farmers in Ghana / per region

| SEED | UPPER EAST | GREATER ACCRA | BRONG AHAFO |
|----------------|------------|---------------|-------------|
| Power Rano | | | 17 |
| Pectomech | 14 | 4 | 13 |
| Ada Lorry Tyre | | 8 | |
| Burkina | | 2 | |
| “No Name” | 18 | | |
| Meenagiant | | 1 | |
| Nimagent F1 | | 9 | |
| Techiman | 1 | 2 | |
| Wosowoso | | 2 | |
| Other | 1 | 3 | |

Source: Robinson and Kolavalli 2010a: 5 (IFPRI Three Region Survey 2009).

In 2009 IFPRI and the International Fertilizer Development Center (IFDC) also conducted a survey of agricultural input dealers in Ghana. The survey identified 3,389 agricultural input dealers (ranging from small retail shop owners to fertilizer and chemical wholesalers) of which 80 percent sold fertilizer, 91 percent sold agro-chemicals, 67 percent agricultural tools, 59 percent seeds and 3 percent animal feed (Krausova and Banful 2010: 1). At time of writing there are 1,200 registered agricultural input dealers under the umbrella of the Ghana Agri-Input Dealer Association (GAIDA) (Ghana Agricultural Associations Business & Information Center 2010: vi). GAIDA was established in 2004 as a national body of agricultural input dealers in the country. It provides a forum to acquire and disseminate information about inputs such as fertilizers and pesticides (GAIDA n.d.).⁸⁰ There exists a satellite office in each of the country's 10 regions. Each regional office is responsible for providing training to dealers on the handling and administering of input supply, particularly agro-chemicals and fertilizer. Initially, the trainings that agro-input dealers received were given under the auspices of the \$3 million (U.S) Ghana Agro-Dealer Development (GADD) project launched in 2008, funded by the Alliance for a Green Revolution in Africa (AGRA) and implemented by the International Center for Soil Fertility and Agricultural Development (IFDC) (MOFA n.d. GADD).⁸¹ The GADD project has since then also collaborated with MOFA officials (Plant Protection and Regulatory Services Division) to train dealers. The training is vital in ensuring safe practices, which dealers can pass along to the farmers who buy the products. In addition to trainings, GAIDA provides dealers with networking opportunities (such as with companies who manufacture the products), as well as opportunities to obtain, as a group, access to credit from financial institutions and to lobby government institutions on policy that affects them.

⁸⁰ More information about GAIDA is available at: <http://gaida.webs.com>

⁸¹ More information about AGRA and IFDC is available on their websites at: <https://ifdc.org> and <http://agra.org>

CHAPTER 5: MATSEKOPE TOMATO SECTOR - INPUT, OUTPUT, AND GEOGRAPHIC DESTINATION

Matsekope, located in the Dangme East District of the Greater Accra Region, has a farming population of about 600 people and serves as one of the major sources of fresh tomatoes in southern Ghana (Social Enterprise Development Foundation of West Africa, 2008: 12). It is a village, however, located within a region that has one of the lowest productivity figures for tomatoes in the country. For example, in 2009 when fieldwork research for this dissertation started, while the national average yield for tomatoes was 7.5 tonnes per hectare, in the Greater Accra Region the average yield was 5.13 tonnes per hectare, and 5 tonnes per hectare in the Dangme East District (MOFA 2010a: 16; MOFA 2010g: 11).⁸² The village is located about 100 kilometers (km) - between 1.5 and 2 hours depending on the conditions of the road during the season and traffic - from Accra.

Figure 9: Highway sign to Matsekope



Source: Picture taken by author during fieldwork (2010).

The tomato season in Matsekope starts in April with the harvest coming in at about July / August – all together nearly a five-month process. Traditionally there was a

⁸² Robinson and Kolavalli also calculated that tomato yield in the Greater Accra Region in 2009 was 5 tonnes per hectare, similar to the MOFA statistic (Robinson and Kolavalli 2010a: 4).

“major” and “minor” season for tomato cultivation in the village. The major season ran from March/April to July/August, while the minor season would start in September and end in mid-December. However, farmers interviewed noted that due to limited rainfall during the latter half of the year, and competition from other tomato growing regions (mainly the Brong Ahafo region) during that same time of year, it is now common for farmers to not cultivate tomatoes during the minor season. Instead, farmers opt to do other employment - such as working in the nearby salt mines. Today, in every day practice, there really is only one farming season for tomatoes in Matsekope and no longer a “major” and “minor” season.

According to the FAO, there are prerequisite climatic conditions in order to ensure tomato plant growth (FAO 2017a).⁸³ The optimal temperature is between 18-25 degrees Celsius during the day and not below 10 degrees Celsius at night. Temperatures above 25 degrees when accompanied by high humidity can reduce yield, due to possible pests and disease that can emerge in those conditions. A dry, warm climate is preferable. The crop can be grown on a wide range of soils, but a well-draining, loam soil with a pH level between 5 and 7 is optimal. For the following 90 to 120 days after transplanting seedlings, water requirements can range from 400 to 600 mm depending on the climate. According to the Ghana Statistical Services (GSS), the annual average temperature range in the Greater Accra Region is 20 to 30 degrees Celsius with an average rainfall of 635 mm along the coast (GSS 2013b: 2). The peak of the rainfall period runs from April to July, which coincides with the tomato season in Matsekope. The soil in the Greater Accra Region also has a pH between 5.4 and 8.2 (MOFA 2013: 5). However, there are aspects of the soil that are not optimal for cultivating crops. Soil in the region tends to have low organic content with shallow topsoil, hindering crop production (GSS 2013b: 2). With the exception of the low organic content of the soil, Matsekope is though in an area that has the necessary climatic conditions for tomato production.

⁸³ Refer to FAO website at: <http://www.fao.org/land-water/databases-and-software/crop-information/tomato/en/>

In accordance with Gereffi's analysis framework, this chapter focuses on input, output, and the geographic destination of tomatoes cultivated in Matsekope. Since the individual interviews with farmers were more detailed than the group interviews, the quantitative data - in particular for the input and output sections of this chapter - are extrapolated from the 27 individual interviews with farmers. Few of the farmers (4 out of 27) maintained written records, yet despite this challenge the input and output sections provide an overview of the input costs and the output produced by those farmers. All other discussion in this chapter draws, where possible, not only from the individual interviews, but also from all 44 farmers interviewed in Matsekope (i.e. individual and group interviews combined).

5.1: INPUT

Land, cultivation, and input supply

The size of the farm lots ranged from 1 to 30 acres, however, the majority of farms (18 out of 27) were within the 1-5 acre range. The total amount of land being utilized by all 27 farmers to cultivate tomatoes was 176 acres. Farmers rented the majority of the land (106 acres). The remaining 70 acres was land that belonged within the families of the farmers and therefore they did not pay rent to utilize it.⁸⁴ Out of the 27 farmers, 16 farmers rented land to cultivate tomatoes, 8 farmers paid absolutely no rent, while 3 farmers utilized farmland of which some of the land was rented, while the rest belonged within their family and therefore was rent-free (see Table 2).

⁸⁴ The issue of customary land tenure is discussed in more detail in chapter 7 "Uncovering Multiple Forms of Governance".

Table 2: Individual Farmer Interviews - Gender, Size of Farmland, Family Ownership or Rental of Farmland (Case Study of Matsekope, 2009 Season)

| FARMER | GENDER (FEMALE OR MALE) | SIZE OF FARMLAND (ACRES) | FAMILY OWNERSHIP OR RENTAL OF FARMLAND |
|---------------|--|---|---|
| #1 | Male | 6 | Rent |
| #2 | Female | 6 | Rent |
| #3 | Female | 4 | Rent |
| #4 | Male | 5 | Own |
| #5 | Male | 20 | Rent |
| #6 | Male | 8 | Rent 4 /Own 4 |
| #7 | Female | 1.5 | Own |
| #8 | Female | 2 | Own |
| #9 | Female | 6 | Rent |
| #10 | Female | 5 | Rent |
| #11 | Female | 2 | Own |
| #12 | Female | 10 | Rent |
| #13 | Female | 3 | Rent |
| #14 | Male | 30 | Own |
| #15 | Female | 3 | Rent |
| #16 | Male | 1 | Rent |
| #17 | Female | 3 | Rent |
| #18 | Female | 2 | Own |
| #19 | Female | 4 | Rent |
| #20 | Male | 4 | Own |
| #21 | Female | 8 | Rent 4 / Own 4 |
| #22 | Female | 2.5 | Own |
| #23 | Male | 4 | Rent |

| | | | |
|-----|--------|----|-----------------|
| #24 | Male | 21 | Rent 8 / Own 13 |
| #25 | Female | 5 | Rent |
| #26 | Female | 5 | Rent |
| #27 | Female | 5 | Rent |

Source: Author's interviews with farmers in Matseko (2010).

Preparation of the nursery bed was the first step for all of the farmers. The bed was first ploughed, the soil moistened, covered with straw, and then sterilized with fire. Thereafter the surface was uniformly leveled out. The size of the beds varied slightly. For example, one bed was 1 meter long and 60 centimeters wide, while another was 1 meter long and 83 centimeters wide. MOFA's best practices allowed for varying sizes of nursery beds.⁸⁵ Rather, what was key for MOFA was how the tomato seeds were sown into the bed. Some of the more stark differences amongst the farmers - in terms of cultivation practices and inputs utilized - started to emerge once the preparation of the nursery bed had been completed and all was prepared for the sowing stage.

When sowing the seeds, the farmers were sowing them in rows of about a hand's length apart and within each row a few centimeters apart. They used their hands and fingers for measuring and it appeared to me to vary only slightly from farmer to farmer. The sowing thus did not differ very much. However, a clear difference between farmers became evident in regards to seed - the variation in the type of seed utilized during cultivation. All of the farmers, with the exception of 2 of them, stated that they obtained their seed from the local market at a local store. The 2 farmers who did not obtain seed from local stores instead used seed from their previous year's harvest - a practice that has been discouraged by MOFA.⁸⁶ Out of the 27 farmers, only 5 farmers stated that they used a certain brand of seed - Techiman,

⁸⁵ Based on interviews with MOFA officials and the set of "best practices" referred to in the previous chapter.

⁸⁶ Refers to the best practices endorsed by MOFA and discussed in the previous chapter.

Dogobum, Laurano, and Nimagent F1.⁸⁷ Seed that was of a certain brand was often packaged in tin cans with labeling that provided information about the product. The Plants and Fertilizer Act of 2010 (Act 803) clearly calls for seed that is marketed in Ghana to be packaged in secure containers and to be labeled with information about the seed such as its species, class, variety name, year of production, and weight (Republic of Ghana 2010a: 21). In contrast, the rest of the farmers had no preference for a specific brand. Rather they bought the seed, which was most economical for them, and the packaging varied in terms of different-sized bottles/containers, with often no name or information about the product (see Figure 10).

Figure 10: Example of seed bought on the local market (not labeled)



Source: Picture taken in Matsekope by author during fieldwork (2010).

Farmers were dependent on rainwater for irrigation during the season, except for the seedling (i.e. nursery) stage. Throughout the nursery stage daily irrigation was necessary. A land depression (seen on the right when entering the community) was used to irrigate the nursery bed if there was rainwater in it (see Figure 11). Alternatively, water was also obtained from “public stands” (pumps), which provided pipe water. There were 4 such stands / pumps in the village. Only 2 of the farmers interviewed noted that they obtained water for the seedling process from

⁸⁷ Nimagent F1 was mentioned twice.

these pumps. Farmers had to pay the Community Water and Sanitation Agency (CWSA) for this water. Five water and sanitation officers collected payment, which varied according to how much water was taken from the pipe. Generally, a large drum (42 cm in diameter by 98 cm in height) cost 50 pesewas, while 1 bucket (28 cm in diameter by 25.5 cm in height) cost 5 pesewas.⁸⁸ Of the 2 farmers utilizing pipe water, one farmer did so for just over 4 weeks (28 days), while the other for up to 6 weeks (42 days). All the other farmers varied only slightly in terms of how many days they irrigated the nursery bed, with most hovering around the 30-day mark and using the water in the land depression.

Figure 11: Land depression in Matsekope (with rainwater)



Source: Picture taken in Matsekope by author during fieldwork (2010).

Before transplantation of the seedlings, farmers prepared the main farmland by ploughing it. Most often the farmers would rent a tractor locally and plough the land, but in some cases farmers used their own hoe and plough if they owned one. All but 6 farmers rented tractors to prepare the farmland. In some cases the farmers had to

⁸⁸ These measurements are only two examples. A variety of drums and buckets were used, but generally, according to interviews, a “large” drum cost 50 pesewas and an “average” bucket cost 5 pesewas. Both farmers using the pump water noted that they spent about 50 pesewas a day, to keep roughly 1 acre worth of seedlings moist.

plough the land more than once to ensure that the soil was uniform. The seedlings were planted apart from each other at specific intervals. The distance between the seedlings varied from farmer to farmer, but generally they were anywhere from half an arm to a full arm's length apart. As the weeks progressed and the seedlings grew, it was common practice for farmers to place a vertical wooden stake next to each seedling. The seedling and stake were loosely tied together with string so that the plant could grow upright.

Weeding, as well as the application of fertilizer and other agro-chemicals took place at various intervals throughout the cultivation process. The application of fertilizer and agro-chemicals varied from farmer to farmer. The majority of farmers (19 out of 27) used both fertilizer and agro-chemicals. Three farmers used only fertilizer (including cow manure) and no other agro-chemicals, while 5 farmers utilized only agro-chemicals and no fertilizer. There were also differences amongst farmers as regards to when and how much of the products were used during cultivation. An example is the application of fertilizer. Visiting agricultural input dealers in Kasseh, I repeatedly witnessed a single bag of 50 kilograms of fertilizer (YARA brand – NPK 15-15-15) for sale at 50 GHC. Most of the farmers (16) utilized this brand of fertilizer. Some farmers started to apply it to the farmland just prior to transplanting the seedlings while others waited a few days to a week or two after transplantation to start applying it. Farmers also differed in opinion in terms of how much farmland could be serviced by one bag. Discussions with farmers about input supply during interviews reflected that some farmers used a bag to service approximately 1 acre of land, while others quoted one bag being able to service anywhere from half of an acre to 3 acres.

Once transplanting had taken place, farmers were dependent on rainwater as the main source of irrigation for the remainder of the season. The tomato crop is sensitive however to irrigation practices. Generally, a prolonged water deficit limits growth and reduces yield, which cannot be corrected by more watering at a later period. On the other hand, excessive watering may reduce the fruit set and cause a

delay in ripening. MOFA officials have advocated for drip irrigation as the best possible method of watering the tomato crop.⁸⁹ This type of irrigation did not though exist in Matseko. In practice, the farmers in Matseko were dependent on the rainwater supply, which they could not control.

Farm labor throughout the 4-5 month time period of cultivation was largely done by the farmers themselves and their family members. Only in a few circumstances (3 cases) was labor done by hired (i.e. paid) workers. All of the farmers said that family members worked on the farm and that generally hired laborers were rarely taken on – only if it could be afforded or there was an urgent matter, such as a family member falling ill. The first recourse for extra help on the farm was family, and family members were not compensated monetarily. In the few cases where laborers were hired, they never worked the full season, but rather during specific stages of production – such as ploughing, weeding, or harvest time. Of the 3 farmers using paid labor, there was one farmer working on 30 acres of land and he regularly (i.e. each year) hired laborers, but they too did not work the full season.

Table 3 (below) refers to how many farmers bought input supply. Not buying the input supply does not, however, necessarily mean that none of that input supply was used during cultivation. This case study provides various such examples. The first is that all farmers needed land to cultivate tomatoes. Of the 8 farmers not renting land, they were rather utilizing land that belonged within their respective families and therefore did not have to pay rent for it. All farmers also used tomato seeds, but the 2 farmers who did not pay for their seed, instead utilized seed from tomatoes of the previous years' harvest. In the case of fertilizer, one of the farmers used cow manure in its stead. For tools, all farmers used some type of tool, however for the 6 farmers that did not buy tools, it was because they already owned the necessary tools and did not rent a tractor to plough their land. For irrigation, 2 farmers used pipe water to irrigate the nursery beds, but otherwise rainwater was

⁸⁹ Based on interviews with MOFA officials and the set of “best practices” referred to in the previous chapter.

the main source. And while 3 of the farmers specifically hired laborers, all farmers had some of their family members work on the farm.

Table 3: Variation in the number of famers buying input supply
(Case Study of Matsekope, 2009 Season)

| INPUT SUPPLY | NUMBER OF FARMERS USING PAID-FOR INPUT SUPPLY |
|----------------|---|
| Land (rented) | 19 (out of 27) |
| Seed | 25 (out of 27) |
| Fertilizer | 22 (out of 27) |
| Agro-Chemicals | 24 (out of 27) |
| Tools | 21 (out of 27) |
| Water | 2 (out of 27) |
| Laborers | 3 (out of 27) |

Source: Author's interviews with farmers in Matsekope (2010).

Observation of the cultivation practices, combined with information received during the interviews with farmers, demonstrated that farmers did follow the basic steps outlined in the best practices upheld by MOFA. However, there was variation when it came to the brand of input supply, when, and how it was utilized. The differences did not allow for uniform production and could also be factors inhibiting production levels as well as the quality of the tomato.

Comparison with MOFA's 2009 Crop Budget for the Coastal Savannah Zone

Key similarities emerged on input supply costs when comparing MOFA's Crop Budget for tomatoes in the Coastal Savannah Zone (where Matsekope is located) with information that emerged from the individual fieldwork interviews with 27 farmers in Matsekope (see Table 4). For the 2009 season MOFA's Crop Budget notes that the highest average cost per acre for input supply products was fertilizer, at 50 GHC (MOFA 2010c: 32). In the fieldwork sample, fertilizer also came in as the most

expensive input supply product. However the average cost for fertilizer in the fieldwork sample was 33.53 GHC per acre.⁹⁰ The difference in cost between the two sets of statistics may be attributed to the fact that the MOFA figures were based on data from the entire Coastal Savannah agro-ecological zone covering thousands of farmers, while the fieldwork sample covered data from only 27 farmers in one village. In addition to this, 5 of the 27 farmers in the fieldwork sample did not use any store bought fertilizer, and amongst those that did buy it, there was variation in how the fertilizer was utilized. Some farmers stated that a bag serviced approximately 1 acre of land (similar to the MOFA Crop Budget), but other farmers quoted a bag as able to service various sizes of farmland ranging from half of an acre to 3 acres (i.e. as discussed earlier on in this chapter). More prominent similarities between the MOFA statistics and the fieldwork sample were in regards to other agro-chemicals and tools. Agro-chemicals (excluding fertilizer) cost on average 9 GHC per acre (MOFA 2010c: 32). The average per acre cost for agro-chemicals (also excluding fertilizer) in the fieldwork sample was 8.09 GHC.⁹¹ The MOFA statistics noted tools costing on average 18.50 GHC per acre, while in the fieldwork sample it was 15.85 GHC (MOFA 2010c: 32).⁹² Interestingly, water and paid laborers were not included in the MOFA budget. This indicates that according to MOFA, neither water or paid laborers were considered regular, definite costs. Fieldwork demonstrated that farmers in Matsekope were almost entirely dependent on rainwater and their

⁹⁰ The average per acre cost for fertilizer (33.53 GHC) was achieved by dividing the total amount that all 27 farmers spent on fertilizer (5,902 GHC) by the total acreage farmed (176 acres). There were 5 farmers that had no costs for fertilizer because they did not use any store bought fertilizer.

⁹¹ The average per acre cost for agro-chemicals (8.09 GHC) was achieved by dividing the total amount that all 27 farmers spent on agro-chemicals (1,425 GHC) by the total acreage farmed (176 acres). There were 3 farmers that had no costs for agro-chemicals because they did not buy or use any agro-chemicals during the cultivation process.

⁹² The average per acre cost for tools (15.85 GHC) was achieved by dividing the total amount that all 27 farmers spent on tools (2,790 GHC) by the total acreage farmed (176 acres). There were 6 farmers that had no costs for tools because they did not use tractor services and already owned their own machet/cutlass and plough/hoe.

own labor (as well as the unpaid labor of family members) to operate their farms. Of the fieldwork interviews, only 2 farmers utilized water from pumps during the seedling stage and only 3 farmers utilized paid laborers. In summary, similarities between the MOFA Crop Budget and the fieldwork sample exist in input supply costs related to fertilizer, agro-chemicals, tools, water, and paid laborers.

Land and seed costs were the main differences between the MOFA Crop Budget and the fieldwork sample. Costs related to land in the fieldwork interviews averaged at 5 GHC per acre, which was much lower than the 25 GHC figure noted by MOFA (MOFA 2010c: 32).⁹³ The difference might be due to the fact that land rental can differ across the country, taking into account the varying customary land tenure systems that exist nation-wide.⁹⁴ The Coastal Savannah zone stretches along the country's coast from approximately the city of Cape Coast to nearly the border with Togo, crossing 3 of Ghana's 10 political-administrative regions (Central Region, Greater Accra Region and the Volta Region), not to mention numerous districts within each of these regions. Also, approximately a third of the farmers (8) in the fieldwork sample had no land costs at all since they did not have to pay rent, which drives down the average cost calculation for the group. The other key difference between the fieldwork sample and MOFA's Crop Budget was the seed cost. MOFA noted an average cost of 6 GHC per acre for seed (MOFA 2010c: 32). In the case study sample, the average cost for seed was 13.03 GHC per acre.⁹⁵ However, when looking at seed cost per acre for each individual farmer, there was one farmer in particular who had

⁹³ The average land rental cost per acre (5 GHC) was calculated by tallying up the total amount that all 27 farmers spent on paying rent (880 GHC) and dividing that figure by the total acreage farmed (176).

⁹⁴ The issue of customary land tenure is explained in more detail in chapter 7 "Uncovering Multiple Forms of Governance".

⁹⁵ The average cost for seed per acre (13.03 GHC) was calculated by tallying up the total amount that all 27 farmers spent on seed (2,294 GHC) and dividing that figure by the total number of acres farmed (176 acres). There were 2 farmers with no costs for seed because they used dried seed from tomatoes of the previous year's harvest - i.e. they did not buy the seed on the local market.

an extraordinary high cost - 63 GHC for each acre of farmland.⁹⁶ If the calculation did not include that particular farmer's seed costs of 63 GHC per acre, then the average seed cost per acre for the 26 remaining farmers interviewed, would be 6.62 GHC.⁹⁷ This figure is much closer to that of the MOFA Crop Budget.

Table 4: Tomato Crop Budget: Coastal Savannah Zone and Matsekope (2009 Season)

| CROP BUDGET (Coastal Savannah) | | CROP BUDGET (Matsekope - 27 Farmers / 176 Acres) | |
|-----------------------------------|-------------------------|---|------------------------------|
| INPUT SUPPLY | AVERAGE COST (GHC/ACRE) | INPUT SUPPLY | AVERAGE COST (GHC/ACRE) |
| Fertilizer | 50 | Fertilizer | 33.53 |
| Agro-Chemicals | 9 | Agro-Chemicals | 8.09 |
| Tools | 18.50 | Tools | 15.85 |
| Land | 25 | Land | 5.00 |
| Seed | 6 | Seed | 13.03 (or 6.62) ^A |

Source: Author's interviews with farmers in Matsekope during fieldwork (2010); Ministry of Food and Agriculture 2010c: 32.

^A The 6.62 cost for seed is only the result if doing the calculation without the farmer who had the highest cost per acre for seed (i.e. 63 GHC/acre).

⁹⁶ The farmer with the 63 GHC per acre cost for seed farmed 20 acres of land and spent in total 1,260 GHC on seed over the course of the season.

⁹⁷ The 6.62 GHC average cost for seed per acre for the 26 remaining farmers was calculated by tallying up the total seed cost (1,034 - i.e. 2,294 GHC minus 1,260 GHC) and dividing that figure by the total number of acres farmed (156 acres - i.e. 176 acres minus 20 acres).

Calculation of total input costs

Initially, the individual interviews conducted with farmers provided 3 possible means by which to obtain a farmer's total input supply cost for the 2009 tomato season. Among the various questions posed to farmers (please refer to Appendix 1), farmers were asked what their total input supply costs were, if they kept written records of it, and via a number of separate questions information was solicited about the separate input supply categories (i.e. fertilizer, agro-chemicals, seed, tools, land, water, laborers). With only 4 farmers keeping written records, information pertaining to input supply costs was de facto obtained by only two methods. The first being the farmer's answer to the question of what his or her total input supply cost was, and the second being information obtained during the interviews on what the costs were per input supply category.

When asking farmers what their total input supply cost was for the 2009 season, the total for the 27 farmers amounted to 18,496 GHC, which came out to an average of 685.03 GHC per farmer.⁹⁸ However, when calculating the average input supply cost by tallying up the cost for each input supply category, the result was a different figure. The total cost for the 27 farmers then amounted to 16,113 GHC, which came out to an average of 596.77 GHC per farmer.⁹⁹ The difference between the two average figures was 88.26 GHC. On the one hand the difference demonstrates that there was a clear margin of error, very likely due to the necessity of relying on farmers' memories for the information. On the other hand, the difference between the two figures was not so substantial and it can be argued that farmers' estimates

⁹⁸ Total input costs of each farmer were tallied up and divided by the total number of farmers interviewed, to come out with the average input cost per farmer for the 2009 season.

⁹⁹ The calculation of input costs included land rental fees, as well as costs for fertilizer, agro-chemicals (insecticide, pesticide, fungicide, herbicide and spraying machines), tools (tractor services, machet/cutlass, hoe/plough), seed, water (for seedling stage), and laborer services.

were relatively consistent. The interview presented two manners in which the total input supply cost could be obtained – by farmers providing the total amount or by the researcher tallying up figures based on separate questions about input supply costs. By obtaining statistical information in these two different ways, combined with there not being consistent, written records kept, it was inevitable that there would be divergence between the two figures. It could be argued that if there were written records, then technically there ought to have been no difference between the two calculations. However, even with the farmers who kept written records, there was no written information on the individual input supply categories. Four farmers kept written records, and while each one noted the total input supply costs, they did not contain any further disaggregated information.

5.2: OUTPUT

Over the course of the season there was a substantial range in price for crates and baskets of tomatoes sold at the farm-gate. According to the farmers individually interviewed, the highest price for a single crate was 100 GHC, while the lowest price was 5 GHC. For baskets, the highest price was 9 GHC and the lowest was 4 GHC. The variation in prices was due to the seasonality of tomatoes in that at the beginning of the season farmers reported receiving higher-end prices and by the end of the season they received lower-end prices (see Table 5). The average revenue earned over the course of the season for the 27 farmers was 1,139.74 GHC, while the average input cost was 685.03 GHC¹⁰⁰. This resulted in an average income of 454.71 GHC (see Tables 6 and 7).¹⁰¹

¹⁰⁰ This is revenue earned from the sale of tomatoes without taking into account as yet the costs – i.e. it is not yet the actual income that farmers can use. The total revenue of each farmer was added up (30,773 GHC) and divided by the total number of farmers interviewed (27) to come out with the average revenue.

¹⁰¹ The average input cost (685.03 GHC) was deducted from the average revenue (1,139.74 GHC) to arrive at the average income (454.71 GHC) for the season. The average input cost of 685.03 GHC was used as opposed to 596.77 GHC, because 4 farmers did keep written

Table 5: Price ranges per crate and per basket ^A
(Case Study of Matsekope, 2009 Season)

| ITEM | HIGHEST PRICE | LOWEST PRICE |
|--------|---------------|--------------|
| Crate | 100 GHC | 5 GHC |
| Basket | 9 GHC | 4 GHC |

Source: Author's interviews with farmers in Matsekope (2010).

^A These prices illustrate the range from the beginning to the end of the 2009 season.

Table 6: Total Input Cost and Revenue per farmer ^A
(Case Study of Matsekope, 2009 Season)

| FARMER | INPUT COST (GHC) | REVENUE (GHC) |
|--------|---------------------|------------------|
| #1 | 450 | 650 |
| #2 | 500 | 700 |
| #3 | 250 | 550 |
| #4 | 400 | 700 |
| #5 | 3,143.50 | 3,975 |
| #6 | 700 | 1,200 |
| #7 | 150 | 350 |
| #8 | 200 | 500 |
| #9 | 400 | 750 |
| #10 | 500 | 850 |
| #11 | 180 | 450 |
| #12 | 850 | 1,600 |
| #13 | 250 | 500 |

records of total input costs and revenue earned, while there were no written records available on the cost per input supply category.

| | | |
|--------------|---------------|---------------|
| #14 | 4,161.50 | 5,285 |
| #15 | 250 | 650 |
| #16 | 100 | 400 |
| #17 | 250 | 750 |
| #18 | 250 | 650 |
| #19 | 400 | 850 |
| #20 | 450 | 850 |
| #21 | 700 | 1,800 |
| #22 | 350 | 843 |
| #23 | 300 | 500 |
| #24 | 2,011 | 3,020 |
| #25 | 500 | 750 |
| #26 | 450 | 800 |
| #27 | 350 | 850 |
| TOTAL | 18,496 | 30,773 |

Source: Author's interviews with farmers in Matseko (2010).

^A Farmers #5, #14, #22 and #24 kept written records of total input cost and revenue earned.

Table 7: Average Input Cost, Average Revenue, and Average Income
(Case Study of Matseko, 2009 Season)

| AVERAGE INPUT COST (GHC) | AVERAGE REVENUE (GHC) | AVERAGE INCOME (GHC) |
|-------------------------------------|----------------------------------|---------------------------------|
| | | |
| 685.03 | 1,139.74 | 454.71 |

Source: Author's interviews with farmers in Matseko (2010).

Determining the total quantity of tomatoes cultivated was challenging since there was no standardized size for crates. MOFA uses 52 kg as the working weight when

calculating its national farm-gate data.¹⁰² MOFA makes no allowances in its calculations for any varying weights other than the 52 kg. However, fieldwork observations supported farmers' claims made during interviews that there were varying sizes of crates.¹⁰³ There was not one standardized size and thus neither was there a standardized weight. Thus, for the fieldwork sample an estimated weight (69kg) was calculated based on the average of the varying weights for crates reported verbally by farmers during their interviews, which ranged from 52 kg to 80 kg.¹⁰⁴ In total 1,150 crates were sold by the 27 farmers (see Table 8). Taking into account the approximate weight measurement per crate, this therefore amounted to 79,350 kg of tomatoes.¹⁰⁵ If 52 kg was used as the average weight per crate (in accordance to MOFA's practices) then the total would be 59,800 kg of tomatoes cultivated over the season. Although the majority of sales were done using crates, a small amount of sales was also done using woven baskets to hold the tomatoes. In total 105 baskets were sold to traders (see Table 8). Of the total 27 farmers, only 3 farmers sold tomatoes in baskets. Between the 3 farmers different sizes of baskets were being used and they were smaller than the crate sizes.¹⁰⁶ These 105 baskets translated into a maximum, additional amount of 2,155.65 kg of tomatoes, should

¹⁰² This was the weight referred to in interviews with MOFA officials and is also the weight used in various MOFA publications on farm-gate statistics – see References section MOFA 2010d, MOFA 2011d.

¹⁰³ Examples of various sizes of crates include the following, which were measured during fieldwork observation:

55cm (height) by 60cm (length) by 60cm (width)
60cm (height) by 50cm (length) by 50cm (width)
65cm (height) by 55cm (length) by 55cm (width)

¹⁰⁴ Crate weights most often quoted by farmers were 52, 75 and 80 kg. The 69 kg is the average of those three weights.

¹⁰⁵ The total of 79,350 kg is achieved by multiplying the average weight of 69 kg with 1,150 (i.e. the number of crates).

¹⁰⁶ The basket dimensions were:
50 cm (diameter) by 30cm (height)
55cm (diameter) by 21cm (height)
55cm (diameter) by 38cm (height)

each basket be able to hold approximately 20 kg.¹⁰⁷ The weight calculations for crates and baskets in the fieldwork sample are rough estimates. Without a central depository for the crates and baskets once tomatoes have been sold, it is not possible to witness, measure, and weigh each of the reported 1,150 crates and 105 baskets. A nationally standardized size and weight for crates and baskets is needed in Ghana in order to better track total quantity levels sold at the farm-gate.

Table 8: Total number of crates and baskets per farmer
(Case Study of Matsekope, 2009 Season)

| FARMER | CRATES | BASKETS |
|--------|--------|---------|
| #1 | 40 | 0 |
| #2 | 30 | 0 |
| #3 | 25 | 0 |
| #4 | 35 | 0 |
| #5 | 80 | 0 |
| #6 | 30 | 35 |

¹⁰⁷ The approximate weight for the basket was based on comparing the cubic volume in the crate with that of a basket. Although not all the crates and baskets were measured, based on measurements taken of the baskets and crates during fieldwork observation, the most often witnessed crate was 60 cm (length) by 60 cm (width) by 55 cm (height). The most prevalent basket size was 50 cm (diameter) by 30 cm (height).

The volume of a crate = length X width X height = 198,000 cm³ (i.e. 60 x 60 x 55).

The volume of a basket = $\pi r^2 \times \text{height}$ = 58,875 cm³ (i.e. 3.14 x 25² X 30).

According to the calculations, 198,000 cm³ fits into the crate and 58,875 cm³ fits into the basket. Consequently, the basket has approximately a third the capacity of the crate or more precisely the crate holds 3.36 times that of the basket. Should the average weight of a crate be 69 kg (i.e. the average of the various weights provided by farmers) then the maximum weight the basket could hold would be approximately 20 kg (more precisely 20.53 kg). The 105 baskets would then hold a total of 2,155.65 kg of tomatoes. Should the average weight of a crate be 52 kg (in accordance to what MOFA utilizes as the working weight), then the maximum weight that a basket could hold would be approximately 15kg (more precisely 15.47 kg). This lowers the total amount of tomatoes to 1,624.35 kg that was sold in baskets.

| | | |
|--------------|--------------|------------|
| #7 | 25 | 0 |
| #8 | 15 | 0 |
| #9 | 35 | 0 |
| #10 | 30 | 0 |
| #11 | 25 | 0 |
| #12 | 75 | 0 |
| #13 | 35 | 0 |
| #14 | 120 | 0 |
| #15 | 35 | 40 |
| #16 | 15 | 0 |
| #17 | 40 | 0 |
| #18 | 30 | 0 |
| #19 | 30 | 30 |
| #20 | 25 | 0 |
| #21 | 90 | 0 |
| #22 | 15 | 0 |
| #23 | 30 | 0 |
| #24 | 140 | 0 |
| #25 | 35 | 0 |
| #26 | 30 | 0 |
| #27 | 35 | 0 |
| TOTAL | 1,150 | 105 |

Source: Author's interviews with farmers in Matsekope (2010).

The Ghanaian Ministry of Food and Agriculture releases statistics each year on Average Farm-Gate Prices for selected agricultural commodities. For the year 2009, the average farm-gate price for 52kg of tomatoes was 56.43 GHC (MOFA, 2011d). The highest monthly average price was 128.57 GHC (July) and the lowest was 27.93 GHC (December) (MOFA, 2011d). The MOFA figures are nation-wide figures and therefore different than the case study sample ones, but demonstrate a similar trend

in accordance with information received from farmers during the interviews – mainly that there is great price divergence for crates of tomatoes from the highest (128.57 GHC/100 GHC) to the lowest price (27.93 GHC/5 GHC). To a certain extent this price differential has to do with the time of year that the tomatoes are being sold. In Matsekope, at the very start of the harvest season (July/August) when tomatoes are still relatively scarce and just coming into fruition, the price is at its highest. As the harvest season progresses and more tomatoes come onto the market, the price drops. Farmers are only able to obtain the higher range prices for the first 2-3 weeks of the harvest season. The lack of adequate storage facilities also contributes to a drop in price as the harvest season progresses. Tomatoes are a highly perishable crop, and if there is no cooling (storage) facility available, then the tomatoes need to be sold as fast as possible. The typical storage utilized by farmers in the sample is a simple wooden crate covered by leaves and put in the shade to limit exposure to the sun. The more tomatoes that come into fruition, the more urgency there is for the farmers to sell them, especially when there is no storage facility. Buyers of the tomatoes have the upper hand here, as they know that farmers are eager to sell what they have before it perishes – in this situation there is minimal bargaining power for farmers in terms of price.

The farmers in this case study made on average an income of 454.71 GHC, which converts to \$104.58 U.S.¹⁰⁸ However, keeping in mind that tomato farming occupies approximately 5 months of the year (meaning that no other crops can be cultivated on that land those months), essentially the \$104.58 U.S. is equivalent to an income of \$0.69 U.S. a day over the 5-month period that it takes to cultivate tomatoes.¹⁰⁹ This figure is below the World Bank's poverty line of \$1.90 U.S. a day, per person (at

¹⁰⁸ For the purposes of conversion, 1 GHC amounts to \$0.23 U.S. (January 2017). Currency conversion is available at the following website: <http://www.xe.com>

¹⁰⁹ The figure of 0.69 cents (U.S.) is obtained by dividing \$104.58 (U.S.) by 150 days (i.e. 5 months).

2011 purchasing power parity), the latest update by the World Bank (WB 2017a).¹¹⁰ The original \$1-a-day poverty line set in 1990 and adopted by the World Bank represented the average of the poverty lines of 10 low-income countries, which were not necessarily the poorest in the world, but rather low-income countries for which poverty lines were available to World Bank researchers. The new poverty line of \$1.90 is based on the world national poverty lines of 75 developing countries and is the average of the 15 poorest countries in the world (Cruz et al 2015: 5).

Looking at the income angle from a different perspective, Ghana Statistical Services issued a report in 2014 on the poverty profile in Ghana over the previous decade. The report was based on results of the latest rounds of the Ghana Living Standards Survey (GLSS 6). The Poverty in Profile report anchors the poverty line on the nutritional needs of the Ghanaian population, with the upper poverty line being equivalent to 1,314 GHC per year per adult (or 3.6 GHC per day per adult), meaning that individuals at this level can be considered as able to purchase enough food to meet their nutritional requirements (GSS 2014b: 7).¹¹¹ A poverty line of 792.05 GHC per year per adult (or 2.17 GHC per day per adult) is the “lower poverty line” meaning that those earning below this level would not be able to meet their caloric requirements even if they spent their entire budget on food (GSS 2014b: 7).¹¹² The average income of 454.71 GHC for the subset of smallholder farmers in this case study (equivalent to 3.03 GHC per day during the 5-month period) is between the lower and upper poverty lines in the GSS report.¹¹³ This means that during the 5-month time period of tomato farming, should farmers only be employed in this respect, then they may not always be able to purchase enough food to meet their

¹¹⁰ For more information on the poverty line, refer to the World Bank website at: <http://www.worldbank.org/en/research/brief/policy-research-note-03-ending-extreme-poverty-and-sharing-prosperity-progress-and-policies>

¹¹¹ The figure of 3.6 GHC per day per adult is obtained by dividing 1,314 GHC by 365 days.

¹¹² The figure of 2.17 GHC per day per adult is obtained by dividing 792.05 GHC by 365 days.

¹¹³ The figure of 3.03 GHC is obtained by dividing 454.71 GHC by 150 days (i.e. 5 months).

nutritional needs. However the case study figure is an average, with some farmers earning a lower and others a higher figure. Moreover, over the course of the year, farmers in Matsekope are engaged in other employment. They farm other crops (pepper, watermelon) and do other jobs besides farming, such as work in the salt mines or raise livestock.

Although the farmers interviewed could clearly demonstrate and explain their cultivation practices, it was of note that only 4 out of the 27 individually interviewed maintained written records as to what the input costs and outputs were during the season. Although a direct correlation cannot be made, the limited number of farmers (10) having completed the basic education requirements might be a contributing factor. The input and output sections relied heavily on a farmer's memory. This entailed a margin of error and might account for any divergences with national figures. The national statistics also incorporated data from a larger subset of farmers. Lastly, also of note was the lack of a national, standardized, size for crates and baskets, which made it difficult to concisely calculate the total amount of tomatoes that were cultivated and sold at the farm-gate. MOFA uses 52 kg as the working weight, but this was at odds with the results of fieldwork observation and interviews with farmers in the case study sample.

5.3: GEOGRAPHIC DESTINATION

In the case study sample, the majority of the tomatoes sold by farmers went to the fresh (outdoor), domestic market. Of the 27 farmers individually interviewed and another 17 farmers participating in the group interviews, all of them noted that at the farm-gate they sold their tomatoes to traders, who then sold the tomatoes at one of the largest, outdoor markets in the country – Makola market in Accra. Only 2 out

of the 44 farmers stated that in addition to traders, they had also sold to the processing sector in the past.¹¹⁴

Outdoor/Fresh Market

Due to the perishability of the crop, and the lack of storage facilities, traders most often come from and return to urban hubs that are closest to where the tomatoes are being cultivated. In the case study sample, traders came from the capital city of Accra. The city of Accra is home to one of the largest outdoor markets in the country, Makola market. Accra is one of the closest cities to Matsekope at about 100 km distance. The key players involved in getting tomatoes to Makola market are “lead boys”, traders, drivers, and of course the commodity queen - perhaps the most powerful of all these actors.¹¹⁵

a) Commodity Queen:

The commodity queen not only managed the Ghana National Tomato Traders Association (GNTTA) traders who bought tomatoes from farmers at the farm-gate, she also managed the sale of those tomatoes at the outdoor Makola market. The commodity queen at Makola market is considered by her colleagues to be responsible for the wholesale market. Generally, each market in Ghana has a queen for each commodity – be it onions, okra, or tomatoes. Becoming a commodity queen is subject to a vote or consensus among fellow traders, and it almost always is someone who has been a trader already for most of her life and therefore has years of market experience. In addition, her family will have been active in the sector – either as farmers, but more often as traders. Often a commodity queen is the second

¹¹⁴ These 2 farmers noted that the sale to the processing sector took place several years prior - in 2007.

¹¹⁵ The overview provided in this section (“Outdoor/Fresh Market”) is based on literature review as well as information received from all 117 interviews conducted with stakeholders in the Greater Accra Region.

or third generation queen who fills the position left open by her mother or grandmother, but it still requires consensus from the rest of the traders. Because of the support a commodity queen needs and receives from her fellow traders, relationships between her and them are generally ones of trust, cordiality and loyalty. The commodity queen often acts as an advocate for her traders. One trader expressed in the interview that she believes she owes her livelihood to the commodity queen since she takes care of her. She provided an example of when her father died suddenly a few years ago and she did not have any cash to register with the GNTTA as a trader, due to the funeral costs. The commodity queen allowed her to pay a much reduced registration fee and to pay it in installments.

In the case of Makola market in Accra, the commodity queen for tomatoes not only coordinated the tomato trade at Makola market, but she could also exert influence on a national scale, as head of the Ghana National Tomato Traders Association. The GNTTA was formed in Accra in 1985 due to a series of challenges in the tomato sector, such as high transport costs and disputes between traders and farmers about payment for the tomatoes (Ngeleza and Robinson 2011: 3). Initially, a tomato trader from Makola market convened a group of traders to discuss how the challenges should be addressed and they agreed to work together to solve them. Over the years the group of traders expanded with tomato traders in other cities joining as local chapters. All ten regions of Ghana now have associations (i.e. regional tomato traders associations) that regulate activities of tomato traders at the regional level, with each regional association being comprised of local markets in the region. According to the GNTTA, today nearly 10,000 traders throughout all of Ghana are part of the organization.

The commodity queen for tomatoes at Makola market was referred to as the “Queen Mother of the national tomato traders association” as well as the “Makola market

queen for tomatoes”.¹¹⁶ These two titles reflect the dual role that she has in regards to her responsibilities as commodity queen for tomatoes at Makola market and as head of the GNTTA. As the commodity queen for tomatoes at Makola market, she regularly met with the queens of other commodities at Makola market to discuss issues of common concern regarding operating activities at the market - such as market regulations or selling space. In addition to meeting with queens of other commodities within the same market, in her capacity as head of the GNTTA, she also met with queens of the same commodity (i.e. tomatoes) but in different markets. Regional tomato association meetings are held monthly in regional capitals, while the national meeting is held quarterly and rotates among the regions. Key issues discussed at regional and national meetings are sourcing and pricing. Taken into account are primarily the costs that need to be covered (such as dues to the local government for the market space, and transportation costs), as well as whether or not it appears to be a good harvest year. Based on their discussions, the tomato commodity queens obtain a rough estimate of the costs and what the selling price range could be at their market. Commodity queens argue that this system allows for an equal playing field among all markets within a region, in that each market will thereby offer consumers approximately the same price for the commodity.

b) Traders:

The traders were the ones who went to farms, bought the tomatoes, and with the help of drivers brought the tomatoes to the market.¹¹⁷ It was largely women who

¹¹⁶ These titles have been named during interviews with farmers, traders, lead boys and GoG officials.

¹¹⁷ The terminology “trader” is used inter-changeably with “market queen” throughout the country, but must not be confused with the role of the commodity queen. In the Dangme East District, the terminology “trader” was used by interviewees and not “market queen”.

fulfilled the role of a trader.¹¹⁸ It is a lifelong vocation that is passed along from parent to child. In order to become a trader that is part of the GNTTA, a person must register and pay an annual fee to the Ghana National Tomato Traders Association. Thereafter the trader will receive a yearly membership card. The amount to be paid for the membership can range from 60 to 150 GHC - it varies from person to person depending on their individual circumstances.¹¹⁹ Membership of the association brings with it several benefits and security for traders such as increased access to farmers, possible group guarantees for financing, and debt management. Traders rarely stay in one region but rather are known to travel throughout the country to take advantage of the varying harvest times.

In the case study of Matsekope, traders' visits to farms took place in highest volume during peak harvest time of July and August. In most cases the trader supplied the wooden crates, although sometimes farmers had their own crates. Few farmers agreed to a farm-gate price immediately with the trader, but ultimately they had to agree to a price because tomatoes are a perishable crop. As there is no cooling or storage facility in or near the town of Matsekope, farmers had no choice but to sell as fast as possible at the best available price. Once the price was agreed upon at the farm-gate, payment to the farmer was not always immediately done. Rather, it was common for traders to agree on a price with farmers, but to pay the farmers after the tomatoes had been sold at the marketplace. During fieldwork interviews, some farmers highlighted that traders were unable to sell tomatoes at the agreed upon price. Consequently, after the sale at the marketplace, traders sometimes had less money to offer the farmer than what was originally agreed to at the farm-gate. Some traders complained that certain farmers conscientiously "mixed up the grading" by putting round, plump, healthy tomatoes on top of the crate and burrowing

¹¹⁸ In the IFPRI three-region study, Robinson and Kolavalli note that of the "itinerant traders or market queens in the country over 85 percent of them are women" (Robinson and Kolavalli 2010b: 6).

¹¹⁹ Based on interviews with the representatives from GNTTA and traders.

underneath those tomatoes that were damaged, so that they could not be readily seen by traders. Farmers in return noted that traders piled crates on top of each other excessively during transport, damaging tomatoes at the bottom of the crates. Often the relationship between farmer and trader was cordial but somewhat strained.¹²⁰

Figure 12: Example of a crate of tomatoes at the farm-gate



Source: Picture taken in Matsekope by author during fieldwork (2010).

c) Lead-Boys:

“Lead-boys”, also known as “agents”, were key in terms of connecting traders to farmers, especially if a relationship had not yet been established between the latter two. Males tended to occupy the vocation of lead-boy. Farmers sold opportunistically in that they were not necessarily bound to a single trader; they sold to other traders should the opportunity arise. In this respect, the lead-boys were essential to bringing traders to a particular community and farms. Which traders the lead boys worked with was variable. Some lead-boys worked only with

¹²⁰ Some of the traders in the interviews argued that they carried most of the risk due to the transportation element, while farmers argued that it was the farmers who carried the most risk when cultivating the crop.

particular traders (long-term relationships), while other lead-boys worked with any trader that needed their services. The lead-boys alerted traders to where there was a possible good harvest. They were often stationed in the town of Koluedor adjacent to Matsekope and from there would “scout” out the various farming communities in the Dangme East District. Via conversations with farmers they determined when and where a good harvest would take place. A lead-boy provided the trader with a good indication of how many farms would have to be visited by the trader in a single day, and generally helped load the trucks with crates of tomatoes. Lead-boys were often present during price discussions between the trader and the farmer. Although the lead-boys did not negotiate the price, in some cases they served as translators.

Although compensation varied according to the trader that lead-boys were working with, for each crate that a lead-boy helped to load onto the truck, he received monetary compensation. Via the interviews with lead-boys, it was made clear that a lead-boy could receive as much as 3 GHC per “large” crate, and as much as 2 GHC for the “smaller” crates and baskets.¹²¹ Similar to traders, lead-boys rarely worked in solely one region. Rather, once the harvest season finished, they moved to another region of the country to take advantage of the harvest season there. In the Dangme East District many lead-boys stayed in the area until October after the chili pepper harvest, and then moved on to other parts of the country. A few stayed in the district to work in the salt mines.

In Matsekope there were a few traders who did not work with any lead-boys. These were women traders who lived in Matsekope and were not only traders, but also were from families that cultivated tomatoes. Come harvest time they would wait for family members (often their husbands or sons) to let them know when the tomatoes were ready, and then arrange for their own transportation to Makola market in

¹²¹ During interviews there were varying weights of crates reported by farmers to the researcher - i.e. 52 kg, 75 kg and 80 kg. The lead-boys did not provide weight measurements for “large” crates or “small” crates and baskets during the interviews.

Accra. They would pay the driver collectively. These women were, however, still members of the Ghana National Tomato Traders Association.

d) Drivers:

Transportation of the tomatoes from the farm to the marketplace is not without cost, which comes in the form of driver services, gasoline, and tolls. It is at the cost and responsibility of the trader and by extension thereof the commodity queen to transport the tomatoes to the market. The traders would generally work together to arrange travel to and from the farms. However, sometimes it was the commodity queen who helped to arrange the transportation as she controlled larger sums of money and more readily had access to capital than traders. Drivers were members of the Cargo Drivers' Union, and were contacted by either traders or the commodity queen to transport the tomatoes.¹²² As not all traders were able to fill a truck with tomatoes on their own, often traders were grouped together by the commodity queen, with each trader's purchase contributing to filling one truck.¹²³

The driver negotiated with the traders a fare for transport of the tomatoes from Matseko to Makola market in Accra. The fare was based on gasoline costs, transportation tolls, and a price per crate. The drivers' gasoline prices fluctuated (between 20-50 GHC for a trip from Accra to Matseko and back to Accra) and depended largely on the price of gas and the size of the truck. The price per crate (ranged from 2-4 GHC) was dependent on how many crates were being transported as well as a rough estimate of the potential selling price of the tomatoes at Makola market. The toll prices were less fluid. Once a truck had been fully loaded with crates of tomatoes, before it was allowed to depart, an official from the Dangme East

¹²² Since time of research, the GNTTA is now the "GNTTTA" – Ghana National Tomato Traders and Transportation Association. Included in the association are now 300 cargo truck drivers.

¹²³ Due to discussions with lead-boys and farmers, traders know approximately how many crates of tomatoes they will be able to obtain from a farmer.

District Assembly office came by to collect a charge (also known as a “way bill”) of 40 pesewas per truck. Once en route to Accra, there were other charges to be paid before reaching Makola market. Namely, the police barrier at Sege en route to Accra, checked that the District Assembly charge was paid, and then coming onto the Tema-Accra highway, there was a toll of 5 GHC. Finally, once entering the municipality of Accra, at the checkpoint a charge of 50 pesewas was due. The trip to the market place was mostly done at night or very early in the morning when there was less traffic and the temperature was cooler, thus allowing the tomatoes to arrive as fresh as possible when the market opened in the morning hours.

e) Makola Market:

Once at Makola market, the traders off-loaded the crates. However, they were not allowed to off-load in just any part of the market. There were specific areas where the tomatoes could be off-loaded and sold, which required a payment. In the case of tomatoes, this payment was made to the tomato commodity queen and could run as high as 30 GHC per day.¹²⁴ The commodity queen in turn used this money to cover key costs, such the yearly required medical examination for traders, the daily levy to the local government (Accra Metropolitan Assembly - AMA) to secure space for the arrival and sale of the tomatoes, as well as payments to private operators for various daily services such as storage facilities, which the AMA did not provide.¹²⁵ Once at Makola, the tomatoes were sorted according to how they looked - if they had blemishes or not, size, firmness, and color - and placed in different containers

¹²⁴ In certain circumstances the commodity queen accepted payment in tomatoes rather than cash.

¹²⁵ For more information about markets under AMA jurisdiction refer to the Auditor-General Report (Ghana Audit Service 2006) in the References section. Each year the AMA passes a Fee-Fixing Resolution detailing categories of fees and licenses for businesses as well as markets.

ranging from large to smaller-sized crates and baskets. The tomatoes were then sold to consumers.¹²⁶

The commodity queen was able to influence the daily market price by taking into account not only the farm-gate and transportation costs, but by controlling the quantity of tomatoes allowed entry and sale at the market. She determined how many trucks entered the market each day. She knew who (i.e. which traders) should be working at the market, where precisely, and on which day. She kept track of how much she was owed and by whom in case there were traders who were not able to make timely payments to her. Generally, tomato traders of Makola market were allowed to enter the market two to three times a week. Such frequency was the most realistic, keeping in mind the time needed to travel to and from the farms. Traders agreed to these terms when they became a member of the Ghana National Tomato Traders Association. Those who disobeyed the rules of membership were subject to a fine between 100-150 GHC depending on the issue and decision of the commodity queen.

Table 9: Geographic Destination - Fresh Market and Key Actors (Case Study of Matsekope)

| ACTOR | PROFILE |
|--------|--|
| | |
| Farmer | Cultivates tomatoes and sells them to a trader at the farm-gate. |

¹²⁶ In some instances tomatoes were also sold to retailers. When referring to “retailers”, these were small-scale retailers such as owners of local restaurants, kiosks, and fruit/vegetable stands.

| | |
|------------------------|---|
| Lead-Boy | Identifies farmers for traders and “leads” them to the respective farms. If needed, provides translation services during farmer-trader price negotiations and helps to load the truck. |
| Trader | Member of the GNTTA and therefore reports to the tomato commodity queen. Buys tomatoes from the farmers. Depends on the lead boy to identify potential good harvests and works with truck drivers to transport the tomatoes to the outdoor market. Sells the tomatoes at Makola market. |
| Driver | Transports the tomatoes from the farm-gate to the outdoor market (Makola). |
| Commodity Queen | Regulates the buying of tomatoes from farmers and manages the sale of tomatoes at Makola market. |
| Retailer (small-scale) | Buys tomatoes at Makola market and ultimately sells them to consumers. |
| Consumer | Buys tomatoes at Makola market. |

Source: Author’s interviews with stakeholders in the Greater Accra Region during fieldwork (2009, 2010, 2011).

Processing Market

Analysis of the geographic destination of tomatoes revealed that there was also another market for tomatoes – the processing sector. Tomatoes destined for the processing market were altered into paste. Farmers in Matsekope that sold to the processing sector, sold to the processing factory Expom, located in Tema. As

previously discussed, Expom has had difficulty in sourcing its tomatoes from Ghana. FAO figures substantiate processing factories' claims that Ghana is not producing enough tomatoes to allow for a nationally thriving tomato processing sector.¹²⁷ Expom largely imports its paste, packages, and then exports it from Ghana to neighboring countries in West Africa. According to a recent IFPRI study, "currently fresh tomatoes from Ghana comprise a mere 7 percent of Expom's tomato inputs, with the rest coming from bulk tomato paste imports" (Robinson and Kolavalli 2010c: 1). The company has established a written contract with the farmers in the past, via a farmers' association. Contracts vary, but most often the company takes responsibility for collecting the tomatoes and transporting them to the factory. One such agreement was the 2007 "Production Agreement" between Trusty Foods Limited (now "Expom") and a farmers' association in the Dangme East District, which will be more thoroughly analyzed in chapter seven.

Only 2 of the 44 famers stated that in addition to selling to traders that they also sold directly to the processing sector in the past. Further analysis is needed to understand why so few famers are selling their tomatoes to the factories. What factors are inhibiting the sale to the processing sector will be discussed in the following chapters. For now it is important to note that the processing sector exists and that it is technically an opportunity for farmers.

Table 10: Geographic Destination – Processing Market and Key Actors (Case Study of Matsekope)

| ACTOR | PROFILE |
|--------------------|---|
| | |
| Farmer | Cultivates tomatoes and sells them to a processing factory. |
| Processing Factory | Buys tomatoes directly from the farmers. The factory takes |

¹²⁷ Refer to discussion in chapter 4 under "4.2 Sourcing Difficulties".

| | |
|-------------|---|
| | responsibility for transportation of the tomatoes to the factory, processes the commodity into paste, which is then sold to distributors. |
| Distributor | Buys tomato paste from the processing factory and sells it to retailers. |
| Retailer | Buys tomato paste from the distributor and sells it to consumers. |
| Consumer | Buys tomato paste from the retailer. |

Source: Author's interviews with stakeholders in the Greater Accra Region during fieldwork (2009, 2010, 2011).

5.4: FARMERS AND GENDER WITHIN THE TOMATO SECTOR

The tomatoes cultivated by farmers in Matseko were destined to go to the outdoor Makola market in Accra. A range of actors were involved in this process such as the commodity queen, traders, lead-boys, drivers, and of course the farmers. In the case study sample, women had a leading presence in the sector, dominating the roles of commodity queen, traders and farmers. There were some clear gender delineations within the sector. The most obvious was that of the tomato commodity queen – she was a female, and based on research interviews this has always been the case. Similarly, females were most often traders. Meanwhile, males occupied the vocations of drivers and lead-boys. Regarding farmers, the situation was more fluid. Of the 27 tomato farmers individually interviewed in Matseko, 18 were women and 9 were men. However, this majority number shrank when all 44 farmers were taken into account, with 21 farmers being males and 23 farmers being females.

The entire family (including children and spouses) worked on the farm during the cultivation process, with gender specific roles being evident. Predominantly males prepared the soil by ploughing it and using tractor services, while mainly females took care of seedling preparation and weeding. The children helped either during

harvest time (when the tomatoes were ripe, had to be plucked, and stacked into crates), and / or at the very start of the process (i.e. seedling preparation) by bringing in buckets of water.

Agricultural feminization (i.e. women predominating the agricultural sector) was evident in the case study.¹²⁸ Not only were women tomato farmers themselves, but they also dominated other key vocations in the sector – that of trader and the tomato commodity queen. Women were active as farmers, but in the case study they also dominated those roles that controlled distribution of the tomato and access to markets. In addition, these women played vital roles outside the sector relating to household work, such as the preparation of food and childcare. Women in the case study appeared to have a higher work burden than men. However, it is difficult to verify empirically the exact share of agricultural work produced by women because agriculture is a venture shared by all household members, making it impossible to separate output by gender (Doss et al. 2011). Women tend to share similar gender-intensified constraints when participating in a trade – such as time constraints due to household work for example (Doss et al. 2011). The daily roles of male and females in society can be deeply rooted in historical, social constructs and perceptions (Bamber and Staritz 2017). Policy interventions targeting the sector will not be effective without understanding women’s crucial role. Future policies will benefit from a gender-based analysis that looks at the gender-intensified constraints as well as gender-related opportunities.

5.5: THE INTRA AND INTER HOUSEHOLD RELATIONS OF FARMERS

A typical farming household active in the tomato sector in Matsekope, involved nearly the entire family in the enterprise of cultivating and selling tomatoes. In the case study sample, of the 27 farmers individually interviewed, the average

¹²⁸ A study prepared for the FAO (Doss et al. 2011) notes the “feminization of agriculture” as meaning that either “women predominate in the agricultural sector or women are rapidly gaining a predominant position” (Doss et al. 2011: 27).

household was comprised of 7 family members.¹²⁹ With such an ample number, farm labor affected nearly all members of the family, in particular the adults. The average age of a tomato farmer was not young, but rather 50 years and a household had on average 5 children. None of the households were limited to cultivating and selling only tomatoes. They were all involved in cultivating and selling other commodities as well throughout the year – mainly watermelon, chili pepper, okro, maize – and raising livestock. Furthermore, adults in each household noted that in addition to farming, they worked when needed in the salt mines near the village or sold perishable and non-perishable items on the streets (locally referred to as “petty traders”). The income made was used to cover household necessities. In particular farmers highlighted paying for rent, food, children’s school necessities, and farming supplies. All of the money earned, whether from tomato farming or other employment, was generally pooled together to cover such costs.

Although English is the official language in Ghana, all of the farmers said that they preferred to speak a local language at home. Basic education in English is free and compulsory in Ghana. It refers to education from the ages of 4-15 and is made up of kindergarten (2 years), primary school (6 years) and junior high school (3 years). In the case study sample, of the 27 farmers individually interviewed, 10 of the farmers stated that they completed the basic education level, 9 farmers completed primary school, and 8 noted that they had no formal education. Nearly all of these farmers were able to understand and speak English, with only 3 not speaking English but stating that they did have limited understanding of the language. All of the farmers spoke several other local languages – such as Adangme, Ga and Twi, with Adangme being the most predominant first language used within households among interviewed members of the community.

¹²⁹ According to the most recent Ghanaian national census, the Dangme East District (where Matsekope is located) has the highest average agricultural household size (5.7) in the Greater Accra Region (GSS 2013b: 94).

The farming community in Matsekope is close-knit. Not only is the village small, comprised of only several hundred people, but the nature of tomato farming in itself requires cooperation with other actors in the sector, including other farmers. Farmers in Matsekope often work together to hire tractor services or share experiences about cultivation practices. Regular communication amongst farmers in the village was common practice. Moreover, the community's experience with international development organizations has also helped to strengthen the ties between farming households. A current example is the Hunger Project (HP), which specializes in providing credit to farmers and will be more thoroughly analyzed in chapter seven. At the time of research, due to the Hunger Project, the community was divided into 14 different farmer groups. Each group was headed by a leader and was comprised of 10 farmers. They were learning how best to work together to obtain the HP loan and repay it.

5.6: BEING A PART OF THE INFORMAL ECONOMY

All of the 44 farmers in the case study sold to traders, who in turn sold the tomatoes at Makola market. This outdoor market, like many in Ghana, is part of the country's informal economy. It is not registered with the national Registrar General's Department under the purview of the Ministry of Justice and Attorney General. The Department is responsible for the registration of all businesses, industrial property, administration of estates, marriages, and public trustees (Ministry of Justice and Attorney General n.d.).¹³⁰ The outdoor markets such as Makola, are a collective force to be reckoned with since they drive the consumer economy. Almost any product can be found at such large, outdoor marketplaces – from food commodities, textiles, shoes, handcrafted items, tools, jewelry and even furniture, to name just a few examples. The most recent Ghana Living Standards Survey (2012-2013) conducted by the Ghana Statistical Service, noted that the informal economy in Ghana employs 88 percent of the working population in the country (GSS 2014a: 23). According to

¹³⁰ More information about the Registrar General's Department can be found on its website at: <http://rgd.gov.gh/index.php/about-us/>

the GSS, the informal economy is made of predominantly unregistered small businesses, home-based workers, street vendors, and self-employed people such as farmers, traders, artisans, and craft workers (GSS 2014a). Being part of the informal economy provides participants with certain flexibilities such as employment hours, or more readily being available to move from one type of work to another. It also allows participants to not be subject to certain taxes. On the flip side, participants in an informal economy can readily experience job insecurity, and per consequence in the long-term are often unable to fully benefit from key government programs, such as the national pension scheme.¹³¹

Makola market is subject though to some oversight by the Accra Metropolitan Assembly. As previously mentioned, the AMA secures a daily fee so that traders are able to use market space to off-load and sell their product. In return, the AMA ensures that certain basic services are provided for those using the space, such as latrines and garbage pick-up. But the actual sale of fresh tomatoes at Makola is left to the workings of the informal economy. The sale at Makola market was ultimately overseen by the commodity queen and was not subject to any government law or regulation. The one exception is health. Should a health concern arise, then MOFA along with the Food and Drugs Authority do diagnostic testing and risk analysis of the product. But there was no enforced, standardized, unit (i.e. specific quantity or packaging) for tomatoes when they were sold at Makola - or the farm-gate. Tracking the price of crates and baskets that traders bought at the farm-gate was difficult due to the variation in packaging once the tomatoes reached Makola market. Fieldwork observation for this dissertation demonstrated that crates of tomatoes arriving at Makola were combined into larger crates or sub-divided into smaller crates and baskets. Tomatoes were sold to consumers in different packages – from a handful of tomatoes for a day’s supply, to a plastic bag full of tomatoes for a few days’ supply – often varying in price especially when bargaining between the trader and consumer took place. As the harvest season progressed, the price of tomatoes at the

¹³¹ For more information about the Ghana’s Social Security and National Insurance Trust (SSNIT), refer to the website at: <http://www.ssnit.org.gh/about-us/>

marketplace also changed. Fieldwork observation witnessed crates of tomatoes arriving from the farm-gate being subdivided into different baskets, with a basket of tomatoes being sold for 12 GHC. When returning only two days later to Makola market, the same size baskets were being sold for 10 GHC. Instead of the price developing as it moved along the value chain, the system appeared to operate in reverse. The quantity to be sold and price were determined at Makola market, which then affected the price and earning potential for every actor at each stage along the value chain - all the way to the selling price at the farm-gate. Farmers had a good idea of approximately how much they spent on input supply. They therefore knew more or less what the minimum selling price at the farm-gate ought to be for their tomatoes, should they wish to garner an income from the endeavor. But farmers did not have direct access to Makola market and rather depended on traders for that access. Farmers were depending on traders to let them know how many, as well as which tomatoes could be sold at Makola, and for approximately what price, all of which affected the farm-gate price.

Analyzing the situation from another perspective, the lack of government regulation of the tomato sales at Makola market, meant that the commodity queen and her traders had a lot of responsibility and costs to cover. In particular, the traders were often in a tight spot and looked towards the commodity queen for guidance and financial help. Besides being responsible for paying the farmer, traders also had to pay lead-boys, often cover transportation costs, and pay the commodity queen requisite dues. Some farmers in Matseko reported that in the past traders would buy tomatoes in larger quantities, but that they were now buying in smaller quantities to ensure that they could sell most of the tomatoes in one or two days. This practice allowed traders to make requisite payments more readily.

Based on information obtained via the case study interviews, a rough calculation is made here on a trader's maximum costs for a single week if trading with farmers in the case study (see Table 11). The height of the harvest season typically takes place from mid-end of July to early August in Matseko. At the very beginning of this

time period, the farm-gate prices will be the highest as tomatoes are not yet flooding the market. Soon thereafter the quantity of tomatoes available will steadily increase and the prices will go down. Although this research did not track farm-gate prices on a weekly basis, during interviews with farmers, the maximum farm-gate price that was quoted for a crate was 100 GHC. Traders would bring up to a maximum of 8 crates to market each time, and did this 2-3 times per week. A maximum farm-gate cost for a trader working with case study farmers would thus be 2,400 GHC if buying 8 crates, 3 times per week, at 100 GHC per crate. Lead-boys reportedly earned 2-3 GHC per crate, therefore costing the trader that week a total of 48-72 GHC for the 24 crates. For transportation, each trip from Accra to Matsekope and back cost 10.90 GHC in tolls, making for a total toll cost of 32.70 GHC.¹³² The remaining transportation costs were gasoline and a basic fare charged by drivers based on how many crates were being transported, and what the estimated market-selling price would be for the tomatoes. Figures for gasoline costs and drivers' basic fare varied, but based on case study interviews, drivers charged anywhere between 20-50 GHC per trip from and back to Accra, while they also charged anywhere between 2-4 GHC per crate. Consequently, the total cost associated with transportation ranged from 140.70-278.70 GHC.¹³³ Finally, a trader was also responsible for paying to the commodity queen possibly as much as 30 GHC each time space at the market was used, thus a total of 90 GHC. When all the costs are tabulated, the maximum price range that a trader had to cover would be 2,678.70 – 2,840.70 GHC for the week.¹³⁴

¹³² Toll costs included 5 GHC each way for the Tema-Accra highway, a 40 pesewas District Assembly cost when arriving and stationing in the Dangme East District, and a 50 pesewas Accra municipality cost, upon entering the capital.

¹³³ The figures of 140.70-278.70 GHC are based on tallying up 32.70 GHC (tolls), 48-96 GHC (crates), and 60-150 GHC (gasoline).

¹³⁴ The figures of 2,678.70-2,840.70 GHC are based on tallying up 2,400 GHC (farmers), 48-72 GHC (lead-boys), 140.70-278.70 GHC (drivers) and 90 GHC (commodity queen).

Table 11: Key costs for the trader in the tomato value chain

| ACTOR | Farmer | Lead-Boy | Driver | Commodity Queen ^A |
|--------------|----------------------------------|--------------------------------|--|--|
| COSTS | Ranging from 5-100 GHC per crate | Ranging from 2-3 GHC per crate | - 10.90 GHC (tolls) - Ranging from 20-50 GHC (gasoline) - Ranging from 2-4 GHC (per crate) | Up to 30 GHC per day when at Makola market |

Source: Author's interviews with stakeholders (in particular traders) in the Greater Accra Region during fieldwork (2009, 2010, 2011).

^A Although the commodity queen was not paid per crate, should the maximum of 8 crates be brought to market by the trader in a single day, then this would be equivalent to paying the commodity queen 3.75 GHC per crate.

A trader's costs have to be put in perspective, however, by comparing it with revenue that a trader earned at the marketplace. As explained earlier on in this chapter, the selling price for tomatoes at Makola market varied considerably - in particular, the tomatoes coming from the farm-gate were not sold at Makola market in the same container. Rather the tomatoes were separated and put into different size containers and those containers were sold for different prices. Analyzing MOFA statistics there appears to be rather modest difference between the wholesale and farm-gate price for tomatoes (see Tables 12 and 13). On average, in 2009 tomatoes were sold on the wholesale market for 31.49 GHC more than at the farm-gate, and in 2010 this figure was not much different coming in at 32.08 GHC (MOFA 2011d: 1; MOFA 2011e: 1). However, a closer look at the statistics shows that there is substantial variation throughout the year between the wholesale and farm-gate price for tomatoes. During 2009 the difference between wholesale and farm-gate

prices ranged from a mere 1.06 GHC (July 2009) to 72.71 GHC (April 2009), while in 2010 the lowest difference in price was 2.70 GHC (August 2010) and the largest difference in the wholesale and farm-gate price was 96.27 GHC (June 2010) (MOFA 2011e: 1; MOFA 2011d: 1). The MOFA statistics demonstrate that although the wholesale price is consistently higher than the farm-gate price, it varies considerably and traders may thus not always be earning substantially more than a farmer. During the month of July 2009 (which would be the height of the harvest season in Matsekope) the national average wholesale price for 52 kg of tomatoes was 129.63 GHC (MOFA 2011e: 1). Utilizing this figure as the basis for a trader's income, it would mean that the trader earned 3,111.12 GHC and therefore had an income of anywhere between 270.42-432.42 GHC for the week.¹³⁵ The calculation is based on a trader garnering the national average wholesale price for 24 crates of tomatoes in one week – it may though be that a trader sells tomatoes for a higher price than this, but conversely a trader may very well also sell at a lower price. Additionally, a trader's income will be affected by the fact that traders usually group together to utilize the services of a single driver and vehicle. The transportation costs are not the sole responsibility of one trader, but rather shared among several traders, and sometimes even partially covered by the commodity queen. A trader does though have substantial costs to reckon with and is responsible for working with a wide array of people.

In respect to the wide variety of people that a trader must work with and the costs that must be covered, it de facto entails a dependence on the commodity queen. The commodity queen, by being in charge of the traders, controls larger sums of money and therefore more readily has access to capital. While taking responsibility for her traders, she covers any costs that they cannot meet, mediates and settles any disputes that they might have with other actors, while also being the liaison with AMA. Ultimately, the informal market allows the commodity queen to exert a great

¹³⁵ The figure of 3,111.12 GHC is based on multiplying 129.63 GHC by 24 crates. The income is calculated by deducting the costs (2,678.70 – 2,840.70 GHC) from the total revenue of 3,111.12 GHC.

amount of influence over the tomato trade at Makola market, but at the same time she also has a significant amount of responsibility and costs to cover, which affects every actor in the value chain.

Table 12: National average farm-gate price for tomatoes (2009 and 2010)

| MONTH | PRICE (GHC PER 52 KG) | |
|-----------|-----------------------|--------|
| | 2009 | 2010 |
| January | 53.80 | 43.38 |
| February | 44.13 | 45.70 |
| March | 49.70 | 59.58 |
| April | 30.00 | 86.12 |
| May | 84.21 | 129.00 |
| June | 79.12 | 116.75 |
| July | 128.57 | 85.88 |
| August | 52.22 | 59.81 |
| September | 41.65 | 48.19 |
| October | 44.80 | 43.64 |
| November | 41.03 | 58.13 |
| December | 27.93 | 46.24 |
| Average | 56.43 | 68.53 |

Source: Statistics, Research and Information Directorate (SRID) of the Ministry of Food and Agriculture (MOFA 2011d).

Table 13: National average wholesale price for tomatoes (2009 and 2010)

| MONTH | PRICE (GHC PER 52 KG) | |
|-----------|-----------------------|--------|
| | 2009 | 2010 |
| January | 100.07 | 65.33 |
| February | 82.95 | 70.52 |
| March | 67.12 | 96.42 |
| April | 102.71 | 128.26 |
| May | 133.51 | 164.52 |
| June | 109.64 | 213.02 |
| July | 129.63 | 127.06 |
| August | 90.22 | 62.51 |
| September | 56.54 | 55.25 |
| October | 69.99 | 64.64 |
| November | 61.38 | 75.20 |
| December | 51.24 | 84.60 |
| Average | 87.92 | 100.61 |

Source: Statistics, Research and Information Directorate (SRID) of the Ministry of Food and Agriculture (MOFA 2011e).

CHAPTER 6: A PRODUCER OR BUYER-DRIVEN VALUE CHAIN?

In addition to the input, output and geographical destination of the commodity, Gereffi introduced another dimension of analysis – governance and the institutional context within that governance structure.¹³⁶ While information on input, output and geographical destination of a product is integral to VCA, the analysis is about more than tracking value along the chain. The governance portion of analysis is necessary to obtain a better understanding of the context-specific issues affecting the value chain. For this reason much attention in scholarly literature has been given to the governance component of Gereffi's model - namely his "producer-driven" and "buyer-driven" classifications (Neilson and Pritchard 2009; Sturgeon 2001; Humphrey and Schmitz 2002; Gibbon and Ponte 2005; Petkova 2006; Bair 2009). Producer-driven chains are "those in which large, usually transnational corporations play the central roles in coordinating production networks" (Gereffi, Korzeniewicz 1994: 7). They are evident in mostly capital and technology-intensive commodities such as automobiles, aircrafts and semiconductors. Buyer-driven chains are those in which "large retailers, brand-named merchandisers, and trading companies play the central role in shaping decentralized production networks in a variety of exporting countries" (Gereffi, Korzeniewicz 1994: 7). They are characteristic in the production of labor-intensive consumer goods such as in agriculture, garments, and foot apparel. In buyer-driven value chains it is the retailer who is managing the production and trade of the commodity, often with exacting standards.

An example of exacting standards in agricultural products is GlobalGAP. A non-profit entity specializing in establishing voluntary standards for the certification of agricultural products worldwide, it was originally called EurepGAP. In 2007 EurepGAP changed its name to GlobalGAP to reflect its global reach, and it currently

¹³⁶ As noted in chapter 1, for the purpose of this thesis, the "institutional context" includes the entire spectrum of the physical institution itself, the policies the institution advocates, in addition to those policies that are informal, such as norms of behavior for example.

claims to be one of the world's leading programs, translating consumer requirements into Good Agricultural Practices with over 175,000 certified producers in 125 countries (GlobalGAP n.d.). It started in 1997 as an initiative amongst European retailers. Becoming aware of growing consumer concerns about food safety with scares such as Bovine Spongiform Encephalopathy (BSE), salmonella, and the Avian Flu, supermarkets in Europe created new quality, safety, and environmental standards for their suppliers of fruits and vegetables. They agreed to harmonize standards and procedures and developed an independent certification system for Good Agricultural Practices (GAP). These standards have forced producers to comply with European-wide accepted criteria for production and trade methods, as well as an array of other issues such as animal welfare and responsible use of water. GlobalGAP standards ensure that the necessary steps are taken, to the best extent possible, so that products are safe for consumers. It also provides an added benefit for producers in that they do not need to undergo several audits against different criteria in order to export to different European countries. While the standards entail harmonization and fewer audits for producers, it only applies, however, to those producers who are able to meet the standards. The system has received some criticism in that it has "propelled the growth of a handful of preferred suppliers who can be relied on to match a set of increasingly complex and demanding standards" (Gibbon and Ponte, 2005: 116).

GlobalGAP is active in providing training about GAP to certifying bodies as well as farmers. Its fruit and vegetable standards cover an array of issues besides production that need to be adhered to by producers. Pre-harvest and post-harvest activities such as soil management and chemical application, post-harvest handling, packaging, and storage are all addressed. All aspects must be complied with in order to receive GlobalGAP certification. The entity works to train inspectors and auditors of certification bodies, and currently has 154 GlobalGAP accredited certification

bodies worldwide, of which in Ghana there is one (GlobalGAP n.d.).¹³⁷ In addition to training personnel of certification bodies, GlobalGAP also provides producers with support in order to achieve certification - via Farmer Assurers. Farmer Assurers are independent consultants who have been trained by GlobalGAP and receive a license allowing them to provide expertise to help producers implement GAP. With a full list of GlobalGAP Farmer Assurers available on their website, as regards Ghana, there are 3 Farmer Assurers available in the country (GlobalGAP n.d.).¹³⁸

Critics of increasingly stringent standards, argue that such standards limit trade – i.e. as the standards become more complex and demanding, the higher the likelihood that there will be a smaller number of suppliers able to meet them (Gibbon and Ponte 2005). GlobalGAP came into being due to growing consumer concerns about food safety. Consumers can play an effective and powerful role when it comes to the establishment of standards to ensure food quality and safety. Ultimately, the entire value chain depends on the consumer and whether or not the product will be bought. However, the average consumer would be unaware of highly complex standards and in Ghana consumer advocacy is still in its infancy. The first priority of most consumers is to get the product and feed oneself and their families. Further, the issue of price comes into play. The issues of specific quality and hazards, although increasingly important, are still largely secondary. At the time of research, the GoG was still working on drafting and enacting comprehensive consumer protection law in Ghana. Without such legislation it is difficult for consumers to access their rights on market products. In addition to a consumer protection law, there also is not in existence an agency that is responsible for consumer claims – i.e. an agency that has the resources to take cases to court, facilitating consumers' access to their rights and forcing the seller to comply with the law.

¹³⁷ The GlobalGAP certification body is DNV GL Ghana Business Assurance Italia S.r.l. with a country office in Tema (Greater Accra Region).

¹³⁸ Refer to the GlobalGAP website at: http://www.globalgap.org/uk_en/what-we-do/the-gg-system/gg-farm-assurers/

Legislation and an agency responsible for consumer claims will not be effective if consumers are not active in claiming their rights. Raising consumer awareness is paramount. The Consumers Association of Ghana (CAG) is the main consumer organization in the country, active in raising consumer consciousness and spearheading a draft proposal for consumer protection legislation. The CAG represents consumer interests, attends workshops, and informs consumers of discussions at the national and international level, where resources allow for it to do so. Consumers are also free to bring forth issues to the CAG, which in return tries to bring issues out into the public arena via radio stations and other media opportunities. Comprised of a President, Vice President, General Secretary, Financial Officer and volunteers, funding is limited and dependent upon donations as well as compensation from Consumers International (CI). Since 1992, the CAG has been a member of CI, a world federation of consumer groups, working to protect and empower consumers throughout the world.¹³⁹

In Ghana, product standards are established by the Ghana Standards Authority (GSA). It is an agency within the Ministry of Trade and Industry, and was established by the Standards Decree of 1967 (National Liberation Council Decree - NLCD 199). The agency has the authority to undertake various tasks in regards to standardization, including but not limited to developing and disseminating national standards, testing services, approval of new weighing and measuring instruments, and product certification (GSA 2017).¹⁴⁰ It has issued mandatory standards for fresh

¹³⁹ The one other consumer entity in Ghana is the Consumer Advocacy Center Ghana, which is also a member of Consumers International, but more recently – since 2008.

¹⁴⁰ GSA's mandate is available on the following website: <http://www.gsa.gov.gh/>
Its mandate covers: i) national standards development and dissemination; ii) testing services; iii) inspection activities; iv) product certification scheme; v) calibration, verification and inspection of weights, measures and weighing, and measuring instruments; vi) pattern approval of new weighing and measuring instruments; vii) destination inspection of imported high risk goods; viii) promoting quality management systems in Industry; and ix) provide advice to the Ministry of Trade and Industry on standards and related issues.

tomatoes and tomato paste. These standards are based on international Codex Alimentarius (henceforth referred to as “Codex”) standards, and cover a multitude of issues from color and texture to sanitary requirements. While Codex standards are technically recommendations for voluntary application by its members, the standards serve in many cases as a basis for national legislation.

Established in 1963 by the Food and Agricultural Organization (FAO) of the United Nations and the World Health Organization (WHO), Codex develops international foods standards, guidelines and codes of practice to protect consumer health. It also works to promote the coordination of all food standards work being undertaken by governments and non-government organizations (Codex 2016).¹⁴¹ It has 185 member countries, 1 member organization (the European Union), and 220 observers (largely non-government organizations and inter-government organizations). Codex standards are operational on a global scale. Ghana, as well as all ECOWAS member countries, (with the exception of Liberia) are members of Codex.

As mentioned earlier, Codex often serves as the basis for national legislation – in large part due to the fact that it is referenced to in the World Trade Organization (WTO) Sanitary and Phytosanitary Standards (SPS) Agreement. Similar to Codex membership, all ECOWAS member countries, with the exception of Liberia, are members of the WTO. In the case of the WTO SPS Agreement, it encourages (not mandates) use of international standards and guidelines where they exist in order to harmonize measures on as wide a basis as possible. Application of international standards into national legislation is often done since it has a benefit - it encourages harmonization, which facilitates trade, while discouraging a legal challenge under the premise of a WTO dispute.

¹⁴¹ More information about Codex can be obtained at: <http://www.codexalimentarius.org>

The SPS Agreement provides a broad framework for standards enforcement and inspection procedures. Although encouraging application of international standards, it does allow members to use different standards and different methods of inspecting products as long as trading partners can agree that there is a level of equivalence. “Members shall accept the sanitary or phytosanitary measures of other Members as equivalent, even if these measures differ from their own or from those used by other Members trading in the same product, if the exporting Member objectively demonstrates to the importing Member that its measures achieve the importing Member’s appropriate level of sanitary or phytosanitary protection” (WTO 2010: 30). How that demonstration is executed and its results, is what can bring about a dispute, which is then taken to the WTO Dispute Settlement Body for arbitration. If members would have identical standards (i.e. both adopt standards of Codex for example), then there would be less room for disagreement.¹⁴²

A key aspect of the WTO SPS Agreement of pertinence to international agricultural trade is that the agreement allows members to use measures that result in more stringent standards. This can be done if there is an appropriate, scientific assessment of risks, and if the measures taken to address it are consistent and not arbitrary. According to Article 3.3. “Members may introduce or maintain sanitary or phytosanitary measures which result in a higher level of sanitary or phytosanitary protection than would be achieved by measures based on the relevant international standards, guidelines or recommendations, if there is scientific justification” (WTO 2010: 29). So while allowing members to enact more stringent standards, the agreement tries to balance the provision by: i) requiring it be based on scientific justification; ii) requesting it to not discriminate between other Members, and iii) that it be measures, which are consistent, not arbitrary.

¹⁴² Consumers International has been critical about how, since the introduction of the WTO SPS Agreement, there has been growing pressure to elaborate standards to facilitate trade, rather than to maximize consumer protection (Consumers International 2005).

In cases where there is scientific uncertainty as to the risks for human, animal or plant safety, Article 5.7 of the agreement, allows for the “precautionary principle” to be applied. This article allows a member to enact temporary “precautionary” measures in order to ensure human, animal or plant safety. In cases where there is insufficient relevant scientific evidence, a member country may provisionally adopt sanitary and phytosanitary measures based on information available at that time. In such circumstances, “Members shall seek to obtain the additional information necessary for a more objective assessment of risk and review the sanitary or phytosanitary measure accordingly within a reasonable period of time” (WTO 2010: 31).

Taking Gereffi’s explanation and specifically his definition of producer-driven and buyer-driven chains, it is difficult to classify either the fresh or processing tomato value chains in Matsekope. This is due to the absence of several necessary characteristics, but the most noticeable is the weak export component, especially in the fresh tomato market. Gereffi refers to commodity chains, but always at the global level, and therefore the international dimension is an integral part of his classifications. Although there does exist export of tomatoes in Ghana, it is minimal and was not the case for any of the farmers in the case study for this dissertation (FAO 2017e).¹⁴³ Farmers in Matsekope do not cultivate fresh tomatoes for export. Rather, they cultivate for the national, outdoor market – in particular Makola market in Accra. The outdoor/fresh market value chain in Matsekope is national and not international in scope, while the cornerstone of Gereffi’s governance classifications entail the presence of an international component. Due to this missing international aspect, none of the necessary actors according to Gereffi’s classifications exist in the

¹⁴³ In 2013, Ghana exported a total of 29 tonnes of fresh tomatoes with 24 tonnes going to Sierra Leone and 5 tonnes to Burkina Faso. However, none of the farmers in the case study stated that they sold their tomatoes to the export market, but rather all farmers (44 in total) noted that they sold to traders, who in turn sold to local retailers and consumers at Makola market in Accra. For the above-mentioned export figures, refer to the FAOSTAT website at: <file:///Users/soju72/Downloads/e1f4e5f8-9102-4ae3-a0b2-8d32e467dd6f.xls.html>

outdoor/fresh market value chain – i.e. the transnational corporations, large-scale retailers and brand-name merchandizers.

The case study sample in Matsekope did though have some exposure to the international component, via work with Expom, which exports tomato paste. Tomato processing entities in Ghana are few (three in total at time of field research) with Expom being the most operational in terms of exportation of paste, but still processing below its maximum capacity.¹⁴⁴ Of the two Gereffi governance classifications, a buyer-driven one appears to best describe the tomato paste value chain in Matsekope. In the processing sector there is no large, transnational corporation playing a central role in coordinating production. Neither is that production characteristic of a capital and technology-intensive commodity, which is necessary for a producer-driven value chain. Key aspects need exist to qualify as a “buyer-driven” chain in accordance to the definition provided by Gereffi in 1994. These aspects are:

- a) international trade as it refers to “exporting countries”;
- b) large retailers, brand-name merchandisers and trading companies who play a central role in shaping decentralized production networks; and
- c) a labor intensive product.

Analyzing the tomato paste industry in Matsekope in accordance to this definition, there is international trade – minimal but it does exist when Expom exports its tomato paste to countries in West Africa. Expom abides by GSA standards, which in turn are based on Codex. The company works with distributors, which sell to international food retailers. There are also various brand names under Expom, such as “Italia”, “Bonne Mama “ and “La Bianca”. The product ultimately produced is a labor-intensive consumer good, starting with the tomatoes that are cultivated and ending with the tomato paste having gone through various processing procedures. But whether or not the tomato paste value chain in Matsekope is indeed indicative of a buyer-driven model merits closer analysis.

¹⁴⁴ Two of the farmers in the case study noted that they also sold to the processing sector – Expom.

The tomato paste value chain appears to abide by all the necessary characteristics for a buyer-driven classification, with however one exception - the international retailers do not play a central role in managing stringent standards for production and trade of the commodity. Proponents of Gereffi might argue that a buyer-driven classification is still the most evident in this case. The rationale being that at present Codex standards are upheld because the retailers work within the parameters of international and national government legislation, but as soon as the retailer wishes to put forth new standards – ones that still abide by international and national laws but might be more complex (such as GlobalGAP) - then processing entities and farmers have no choice but to abide by them. Introduction of more stringent production standards will likely bring with it an increase in the retailers' management role as regards the trade of the commodity as well.

The relevance of a “buyer-driven versus producer driven analysis” in this case study was questionable when so few of the farmers in Matsekope produced tomatoes that were part of an international value chain. Gereffi's governance model of analysis was applied to the tomato paste sector because it had the international dimension (i.e. export, large retailers, brand-name merchandisers) and it was labor-intensive. However, the processing sector still fell slightly short of qualifying as a purely buyer-driven value chain due to the limited role of retailers. The case study dealt more with national, agricultural value chains, while Gereffi's classifications were formulated for the international, manufacturing market. The processing sector is though an important market opportunity for farmers. In that respect, analysis of the tomato paste value chain in accordance with Gereffi's governance definitions was important in providing information about which entity or entities wield influence along the chain when export is involved.

Analysis of the Matsekope tomato sector (outdoor/fresh and processing value chains) in accordance with Gereffi's producer and buyer-driven classifications brought forth two main conclusions. The first was that standards were a key issue

and may become a possible challenge for farmers should more stringent standards ever be invoked by retailers. The second conclusion is that not all value chains are necessarily evident of either a purely buyer or producer-driven governance model. Neither of Gereffi's two classifications could be applied to the outdoor/fresh tomato market due to the lack of an international dimension, while not even the processing sector (although having a small, international component) exhibited all the characteristics of a producer-driven classification. The processing sector fell just short of having all the characteristics of a buyer-driven value chain. There thus may be value chains that exhibit minimal to many, but not all of the characteristics of Gereffi's classifications. But there must still be some type of governance in existence in a value chain. So if it is not a purely buyer or a producer-driven one per se, then what is it? This left the door open to investigating if there might be other forms of analysis for this case study that better encapsulate governance in the outdoor/fresh market and processing value chains. I thus chose to utilize a different model of governance analysis – one which provided more flexibility in terms of seeing governance from various angles and not only from either the buyer or producer-driven perspective. This other model of governance analysis will be discussed in the next chapter.

CHAPTER 7: UNCOVERING MULTIPLE FORMS OF GOVERNANCE

Kaplinsky and Morris introduced a three-tiered governance typology, which allows for more than one governance form in a single value chain. Governance is seen in terms of three separate branches – legislative, judicial and executive - with each having a specific purpose. Legislative governance establishes the “basic rules which define the conditions of participation in the chain, while judicial governance serves to audit performance and check compliance with the rules, and executive governance provides assistance to value chain participants in meeting the operating rules” (Kaplinsky and Morris 2002: 30). According to Kaplinsky and Morris, much of the existing discussion on governance fails to recognize this threefold distinction and hence is the reason why there is often confusion about which entity actually “governs” a particular value chain (Kaplinsky and Morris 2002). Rather than seeing one entity responsible for governance of the entire chain, according to Kaplinsky and Morris, governance can be executed by various entities. This approach is not only important in that it proposes a different approach to governance analysis, but by doing so, it is not limited to inter-firm relationships. Rather, it necessitates a detailed examination of which actors and their corresponding policies are responsible for governance at different stages. This hopefully sheds more light on what certain actors, such as farmers, are experiencing as they participate in the value chain.

According to Kaplinsky and Morris, legislative governance establishes the basic rules defining the conditions of participation in the value chain. Keeping in mind that the focus of this dissertation is placed on farmers, what first had to be done is identification of which policies / rules and actors define how a farmer participates in the tomato sector. When a farmer participates, he or she is cultivating and selling - both these actions need to take place. In order to sell tomatoes, tomatoes need to be produced, while once cultivated, tomatoes need to be sold to somewhere – a market – so that the farmers earn money. At both the production and selling stages, there are several policies / rules enacted by specific actors that affect how a farmer

is able to participate. Based largely on fieldwork interviews, but also direct observation, and literature review, this chapter will take an in-depth look at those rules (legislative governance), what is done to ensure that they are complied with (judicial governance), and what assistance is given to achieve them (executive governance), ultimately leading to a discussion on several subthemes – credit policy, land policy, product standards policy, and access to markets.

7.1: CREDIT POLICY

Before a farmer is able to begin cultivation, he or she needs to buy input supply, requiring money. The regulations of financial institutions on access to credit have an effect on the extent of a farmer's ability to participate in the tomato sector. Whether farmers are cultivating tomatoes for the outdoor/fresh market or the processing one, acquiring money to buy input supply is a vital first step. Without credit, input supply cannot be bought, tomatoes cannot be grown, and consequently one cannot participate in the tomato trade at all.

For the town of Matsekope, there are two key banks available – the Agricultural Development Bank (ADB – branch office) and the Ada Rural bank. The ADB was established in 1965, with the aim of providing banking services in retail, commercial, corporate and investment banking in the agricultural sector. For farmers, loans are given to groups of 10 to 15 people. ADB encourages them to come in groups with similar types of crops. The group elects its own executives, with the bank relying on peer pressure in that all are liable for the loan. Although not per se necessary, the bank does encourage the groups to be registered as a Farmer Based Organization (FBO). All loans that are given require collateral, with the interest rate being based on risk. The lowest interest rate is 20 percent over a 12-month period. The majority of farmers seeking loans are not large commercial farmers, but rather small to medium scale farmers with on average anywhere from 1 to 10 acres of land. Consequently, the size of the loans also differ significantly from a minimum of 1,000 GHC to a maximum of 30,000 GHC. The ADB does due diligence to see if the group

qualifies for the loan. Issues analyzed during due diligence include destination of the product (i.e. whether or not there is a market), if the farmers themselves are putting money into the cultivation, skill level of the farmers, and lastly written proof that the land can be utilized by the farmer. Regarding the latter point, the bank does not want to give out a loan for farming, when due to ownership or leasing issues the farmer may not be able to use the land. Additionally, ADB monitoring is done throughout the farming season (via branch offices) in order to determine in advance if there may be a default on the loan and why this might be the case. The recovery rate for the loans is about 75 percent, with those defaulting on a loan having the possibility of re-scheduling their loan payment. ADB is located in almost all communities throughout Ghana, with most of its branches (90 percent) being in rural areas.

The ARB Apex Bank located in Accra, serves as an umbrella bank for 130 rural banks. It is essentially a mini-central bank for rural ones. Apex helps rural banks coordinate micro-finance activities and provides technical support. Regarding technical support, Apex regularly visits the rural banks to ensure that there is an adequate skill level among employees to conduct their work and provides training in areas where there is need among staff. As regards micro-finance support, there is close coordination between Apex and the rural banks, but also with donors, the Government of Ghana, and other development partners who want to support micro-finance activities. Via a Memorandum of Understanding (MOU) between Apex and rural banks, when it comes to micro-finance projects, the rural banks are to submit periodic reports (monthly and quarterly) to Apex. In addition, the credit committee of Apex meets regularly to decide which rural banks are to receive credit, based on performance level and the ability to pay back the credit. A rural bank cannot borrow beyond its net worth and Apex in no way controls rural banks' rates.

The closest rural bank to Matsekope is the Ada Rural Bank located in Kasseh. The bank has been in existence since 1982 and provides loans to everyone, but primarily those operating in the agricultural sector – farmers, fishermen, and those working in

the salt mines. The loan portfolio is divided among 3 project officers. Loans are most often given to businesses or to someone who has a current account for at least the past 3 to 6 months. The amount of the loan varies and depends on a series of factors. For farmers requesting a loan, the bank will go to the farm to inspect it, see what type of crop is being grown and what the cash flow is – i.e. input and output. Questions on input and output are verbally asked of the farmer and many farmers know the answer as they have been in the business for years, although a few have written records to show to the bank. Based on the information received, the bank calculates the income earned by the farmer and allows a loan of usually not more than 40 percent of the seasonal income. The average interest rate for the Ada Rural Bank is 28 percent over a 12-month period. Repayment depends on the type of crop, but generally repayment is requested in a 12-month period. The amount of the loan given to a farmer is on average 50 GHC. The success rate hovers around the 60 percent mark for total percentage of people repaying the full loan with interest. Similar to ADB, those defaulting on a loan have the possibility of re-scheduling their loan payment.

According to this study's findings none of the farmers interviewed had taken an individual or group loan from a bank. Rather, farmers in the case study noted that bank policies for prerequisite savings, collateral, and high interest rates were deterrents to requesting a loan. One of the farmers noted that when he started farming, for the first year he tried to obtain a bank loan but was unsuccessful in obtaining it. Rather, desperate for cash and with the responsibility of taking care of his wife and children, he instead turned to other family members and friends for monetary help. The majority of interviewees (42 out of 44) either borrowed money from family or friends or took out a loan with The Hunger Project (HP), an international development NGO. Only two of the farmers responded that they never took out a loan nor did they ever borrow from family or friends. The current situation begs the question of how much more active farmers might be, should they be able to more readily receive and re-pay loans.

The Hunger Project, an NGO active in Matsekope, starts with the assumption that money is a key element in livelihood acquisition. Similar to the banks, a loan is awarded after due diligence analysis of the economic activity or activities for which the loan will be used. The loan is given to a group of farmers and then subdivided per person, with each person receiving a minimum of 50 GHC. The groups are self-selected and self-screened by the people who form them. It is a natural cooperative.¹⁴⁵ Once the groups have been formed, an HP training officer for credit comes to the community to explain the terms, procedures, and what records must be kept. Each group opens up a bank account at a bank, and based on repayment performance, the amount of the loan can be gradually raised, with a limit of 300 GHC per person. The HP interest on the loan is 20 percent. Upon successful repayment of the loan and interest, half of the interest is given to the group while the other half is given to HP. According to HP rules, the individuals of a group are not allowed to use the returned interest as collateral for another loan. The aim is that the money stays in the bank and increases with interest. In order to qualify as having “successfully paid back a loan”, the loan and the 20 percent interest must be paid after a maximum of 1 year after the loan was awarded. This 1-year time period is vital for farmers, since crops have different cycles, meaning that returns vary accordingly. Some fruits and vegetables have a short season and therefore loans pertaining to them can be paid back quite readily. However, with other crops the season is longer and therefore repayment is not accomplished as quickly. With banks such as ADB or the rural banks, a 1-year time period is usually given as well. Payment of the HP loan is made to a specific village member who is the designated manager of the HP project in that village and appointed to the position by consensus among HP

¹⁴⁵ Such natural cooperatives have also proven successful in other NGO work, such as that by the Social Enterprise Development Foundation of West Africa (SEND), which is operational in 50 districts in 4 regions of Ghana. SEND advocates trade policies that will benefit small-scale producers, with special emphasis on women, by first identifying critical policy issues via research at the community level. Its financial program includes production loans, where credit is given to groups ranging in 20-35 in number and its members are self-selected by the farmers who comprise these groups. Loans are given to the group and are subsequently sub-divided among the group based on what has been agreed to by its members.

participants. The penalty on default of payment by an individual is 20 percent of what is left to pay on the loan. Often if one person cannot make the repayment, then the group as a whole covers the cost. The overall budget for farmers is a 38,000 GHC revolving fund, which gradually grows each year with interest. However, Matsekope is not the only village to benefit from this revolving fund – an additional 8 villages take part in the program, of which Matsekope is the epicenter. This limited budget therefore allows for only a select amount of farmer groups in Matsekope to participate in the program, fluctuating each year depending on group arrangements and repayment histories. Among the 44 farmers interviewed for this study, 8 were participating in the HP program, 34 borrowing from friends and family, and 2 farmers stating that they never borrowed money from any entity. Access to money was noted the most times - by 29 out of 44 farmers in this study - as a challenge in the production stage.¹⁴⁶

Summary - Credit policy indicative of legislative, judicial and executive governance

The credit policy of financial institutions is indicative of legislative governance in that it has a direct effect upon farmers' ability to participate in the tomato sector (be it the outdoor/fresh or processing value chain) by establishing and enforcing specific rules that must be adhered to in order to obtain and repay a loan. These same institutions also regularly check a farmer's performance to ensure compliance with certain qualifications and rules to obtain and repay a loan. In this respect they also demonstrate judicial governance. Financial institutions do try to help farmers meet those rules (executive governance) via extensions in loan repayments for example, and in the case of HP provide training to farmers. The amount of assistance given to farmers varies though across financial institutions, and still, not enough assistance is being given to farmers to obtain credit from banks. This is evident in the fact that none of the farmers in this study had a loan with a bank. Farmers

¹⁴⁶ In the interviews, tomato farmers were asked to self-identify challenges in both the production and selling stages. The issue of "access to money" was identified most often by farmers when referring to the production stage.

declined using bank services due to a variety of issues – namely high interest rates and collateral prerequisites. They found it simpler to either ask for money from family and/or friends, or to be part of a specific credit program such as the Hunger Project. Eight of the farmers in the case study were active in the Hunger Project credit program where the prerequisites for a loan are not as severe, a specific repayment scheme is established to complement the crop cycles, training in credit policy is given, and farmers have the opportunity to save some money.

7.2: LAND POLICY

Farmers need access to land to farm on it and to participate in the tomato sector. Such access can be obtained by renting land, however, simple access does not reflect the true nature of the issue at play. What type of access a farmer has is important. In addition to requiring basic access to land to farm on it, what farmers need is land ownership, with “ownership” entailing that they can decide how the land is to be utilized and what investments (including infrastructure projects) are to be made on it. Ownership of property can also serve as collateral for loans (Besley 1995, Field and Torero 2006). Some studies, such as that done by Besley, have also demonstrated that if land is easier to collateralize, then the bank will charge a lower interest rate (Besley 1995: 908). However, of equal importance is that in order to increase productivity, farmers need to make investments in infrastructure – such as improved irrigation technology for example. Such investments cannot be made without the consent of the landowner. De Soto brought the issue into the broader public sphere in 2000 in that “investment incentives depend upon expectations of rights over returns to that investment, and hence on the nature of property rights” (Udry and Goldstein 2008: 2). More recently, in its latest Trade Policy Review of Ghana, the WTO noted that land tenure is still an important issue to be addressed as much of Ghana’s agricultural land is owned by traditional authorities, which may deter small-to-medium scale investments (WTO 2014).

Ghana has a complex network of land tenure systems throughout the country. Land tenure is held by a combination of traditional authorities (customary tenure) and the Government of Ghana. Customary tenure is most prevalent however in the country, covering nearly 80 percent of the land in the country (Mahama and Baffour 2009:1). Most people who acquire and transfer customary land (i.e. land that has been inherited via lineage and claims to it regulated by a tribal Chief or family clan) do not necessarily register it formally with the Government of Ghana due to issues of cost, language, and written information required to register it (Runger 2006). Often little written information about these plots of land in regards to their size and administration exists. Such situations are not uncommon in more rural communities, such as Matsekope. The allocation and administration of land in most of the Dangme East District is allocated and administrated locally, through lineage (customary tenure). Historically, in most of the Dangme East District land is “owned” by family clans that have been living there for generations. The heads of the respective family clans see themselves as customary trustees - not so much “owning” the land, but rather “holding” it and taking care of it on behalf of the entire community. There is the understanding that land should be used for the well-being of the entire community. Land disputes are, however, not always clear-cut. The right to lend or rent out land to a family member or non-family individual; what can be cultivated on the land and who “owns” that which is cultivated; as well as what improvements or investments are allowed to be made on the land, are not uncommon issues requiring attention by the head of the respective family clans, the village Chief and the committee of community elders.

Throughout the country, however, an increasing population, influx of businesses, and a growing global economy, are placing increasing pressure on land allocation and use. Article 266 of the Constitution establishes that foreigners cannot own land in Ghana, but they can lease land for renewable periods of up to 50 years (Republic of Ghana 1992a: 160). The Ghanaian government and Ghanaian citizens can buy land by providing compensation for it, or land can also be leased to them. But it is not uncommon for the customary land tenure system and the government

legislation to stipulate different conditions and processes to ensure allocation of a land title. This creates confusion, not to mention as well that customary tenure varies throughout the country. An array of entities are involved in land administration in Ghana, which can prolong litigation in the court system (World Bank 2003).¹⁴⁷

The Government of Ghana together with the World Bank and the Canadian International Development Agency (CIDA) has since 2003 been working on a project to streamline land allocation and administration in the country.¹⁴⁸ In 2003 the World Bank, CIDA, and the Ghanaian Ministry of Lands and Natural Resources established a long-term (25-year) land administration reform program called the Ghana Land Administration Project (GLAP), building upon Ghana's National Land Policy of 1999 (Ministry of Lands and Natural Resources n.d.).¹⁴⁹ The aim of GLAP is to "develop a sustainable and well-functioning land administration system that is fair, efficient, cost effective, decentralized and that enhances land tenure security" (World Bank 2003: 3). More specifically, the program seeks to: a) harmonize land policies and the legislative framework of customary law for sustainable land administration; b) undertake institutional reform and capacity building to improve the land administration system; and c) establish an efficient, fair and transparent system of land titling, registration, land-use planning and valuation (World Bank 2003). The ultimate aim is simplification and where possible harmonization in order to eliminate any confusion over permit access to land as well as security of land tenure.

¹⁴⁷ These entities include, but are not limited, to the Lands Commission, Land Title Registry, Land Valuation Board, Survey Department, Office of the Administration of Stool Lands, and the Town and County Planning Department.

¹⁴⁸ In March 2013 CIDA was folded into the Department of Foreign Affairs within the Ministry of Foreign Affairs and International Trade. The two entities are now known as one entity – Global Affairs Canada.

¹⁴⁹ Refer to the Ghana Land Administration Project website: <http://www.ghanalap.gov.gh>

In the case of Matsekope, the farmers noted no difficulty in utilizing the land for farming purposes. Eight out of the 44 farmers stated that they did not pay rent for any of the land on which they farmed tomatoes. The reason for this was because the land belonged within their family and the head of the family did not request rent payment.¹⁵⁰ The thought of altering the land for production purposes was only raised by one farmer interviewed. He explained that it would be a very difficult thing to do. He would not know how to justify something that might be very costly, especially if it was land that did not belong to him. But in order to participate more effectively in the tomato trade, farmers need to be able to make decisions on how the land is utilized and what infrastructure investments might increase crop productivity levels. At present, such decisions depend not only on the family that owns the land, but possibly multiple family clans that might be affected by the investment decision. One such example is with irrigation, where infrastructure often has to be built through various plots of land.

Is comprehensive farming irrigation being constrained by land policy?

An infrastructure investment that is key for farming and which is directly affected by land policy, is irrigation. An issue that repeatedly came up during the individual and group interviews with farmers was access to a farming irrigation system. Out of all the farmers interviewed, 28 out of 44 farmers noted lack of access to farming irrigation systems as a challenge in the production stage. There is extensive literature on the challenges in farming irrigation, impacts on productivity, and how crop yields are higher in irrigated areas than in rain-fed ones (Rosegrant and Perez 1997; Ringler et al., 2000; Lipton et al., 2003). As noted in a previous chapter, MOFA officials have considered drip irrigation to be the most appropriate for tomato

¹⁵⁰ Of all the 44 farmers interviewed (17 in group sessions and 27 individually), 8 farmers did not pay any rent. Although payment in money was not necessary for these 8 farmers, discussions during the interviews revealed that ad hoc a small portion of the tomatoes cultivated were also used for personal consumption and shared with their direct and extended family members. The tomatoes were not per se used as payment for the land, but it was a common gesture.

farming in Matsekope. A comprehensive review of World Bank-assisted irrigation projects from 1994-2004 confirmed the significant role of formalized irrigation schemes in increasing productivity, reducing poverty and promoting economic growth (Independent Evaluation Group 2006). With systematic farming irrigation schemes farmers may be able to increase productivity on current plots and continue to produce during other months of the year rather than only operating “seasonally”. The issue of improving productivity is of immediate importance for farmers, but also in light of a growing, global population and consequential increases in land scarcity. Increasing agricultural productivity is a long-term issue that needs to be addressed. In the case of Matsekope, more than half of the farmers interviewed highlight the town’s dependence on rainwater and the lack of a farming irrigation scheme as a challenge for them in the cultivation stage. A farming irrigation scheme would not only increase productivity by allowing farmers to cultivate for nearly the entire year (i.e. increasing the cropping seasons), but it would also play a key role in improving the actual product by allowing a consistent flow of water, thereby not drowning or dehydrating the crop during critical growth stages.

Although consistent irrigation is key to increasing productivity, of equal importance is how the irrigation scheme is maintained and managed. A 2012 study by Fanadzo of Smallholder Irrigation Schemes (SIS) in South Africa, demonstrated that most of the 302 SIS in existence in 2010 had either collapsed or were being utilized below their potential (Fanadzo 2012). Further research demonstrated that the failure of many SIS was due to poor crop and water management practices by farmers resulting in low yield levels (Fanadzo et al. 2010; Van Averbeké et al., 2011). “Human capacity and social (institutional) resources were at the heart of the poor performance of SIS in South Africa” (Fanadzo 2012: 1959). Key is a holistic irrigation philosophy addressing not only the actual engineering of the scheme but also the array of activities that make up the irrigation enterprise. Maintenance, management, extension services, crop production information (including inputs) are all key to a successful irrigation project (Denison and Manona 2007; Fanadzo, 2010).

Since independence, much of GoG policy on irrigation has not been consistent or comprehensive. Instead, irrigation policy was directed by ad-hoc government and donor strategies. According to the Ministry of Food and Agriculture statistics, only 0.4 percent of the total land area that is under agricultural cultivation in Ghana is irrigated (MOFA 2013: 2). Ghana's National Irrigation Policy, Strategies and Regulatory Measures, published in 2011, was an attempt to put forward a long-term (up to 25 years) comprehensive irrigation policy to further agricultural development in Ghana (MOFA 2011a). The document targeted investment for irrigated crop production, highlighting the need to address four problem areas: i) low agricultural productivity; ii) constrained socio-economic engagement with land and water resources (such as gender imbalances); iii) environmental degradation associated with irrigated production; and iv) lack of irrigation support services (MOFA 2011a). The policy document is key in that it has shifted focus from the irrigation project itself, to investments that address issues of how the project is to be managed and maintained. It stipulated the importance of addressing an array of issues related to irrigation and not simply the infrastructure itself. Land tenure, management of agriculture chemicals, and institutional mandates on irrigation developments (currently there is no agency at present that is specifically responsible for training on-farm water management), were a few of the broad-minded issues that the policy document acknowledged had to be tackled in order to have a successful, national, irrigation scheme (MOFA 2011a).

Matsekope does have access to piped potable water. It was made available in 2008 due to the completion of an \$11 million (U.S. dollars) water project spearheaded by international donors DFID (U.K. Department for International Development), DANIDA (Danish International Development Agency), the Government of Ghana, along with Afrowood Consulting as the main consultant under Ghana's Community Water & Sanitation Agency (CWSA). The CWSA is the government agency responsible for supervision of potable water provision to communities. The international donor-GoG project made potable water available to the Dangme East,

Dangme West and North Tongu districts. Under this project, a system was put in place whereby water is pumped from the Lake Volta tributaries. At the village of Aveyime in the North Tongu district, the water is treated using a slow sand filtration system before being linked further to all three districts via pipes. The water & sanitation officers (5 of them) ensure that payment is made for water collected at any of the 4 public stands in Matsekope. The potable water is normally used for personal consumption and cooking.¹⁵¹ Another source of water in Matsekope is the land depression near the entrance of the village. During the rainy season water accumulates and some people in the community utilize it, especially if they have difficulty paying for the pipe water.

A comprehensive irrigation system for farming purposes does not exist in Matsekope. Instead, the town relies largely on rainwater for its farming practices. According to the MOFA office in the Dangme East District, less than 2,000 farmers in the district are benefitting from farming irrigation systems.¹⁵² The farming irrigation systems that are in place in the district are simple tube well sprinkler systems. Underground water is electrically pumped and distributed by high-pressure sprinklers. In the case of Matsekope, drilling expeditions have taken place, but the water has been deemed too salty for farming purposes. In addition, another impediment to introducing a comprehensive irrigation system for farming is that there is a combination of farmers owning the land on which they farm and farmers which do not own but rent the land. Some farmers who own land might be willing to put in an irrigation system, but if they are located next to another farmer who does not own the land, then the initiative becomes complicated. Farming irrigation infrastructure is extensive and in all likelihood requires transit through various plots of land – some of it owned by farmers, and some of it rented out by farmers.

¹⁵¹ It was rare for pipe water to be used for farming practices, but in this study, 2 farmers did mention that they used pipe water for their nursery beds. Please refer to discussion on input in chapter five (“Input, Output, and Geographic Area”).

¹⁵² Based on interviews with the MOFA office in the Dangme East District.

At the time of research, Afrowood Consulting was researching the possibility of doing a pilot project on farming irrigation in the town of Tehe within the Dangme East District. Feasibility studies were being done to determine the viability of a 2-3 year pilot program at a cost of approximately \$1 million in total. The water was to be trapped and extracted from Lake Volta tributaries and then transmitted from the pumping stations to demarcated farmlands via pipes. Once there, water would be delivered to the farms via drip irrigation. Some drinking spots for cattle might also be included. The pipe system can be varied depending on the type of crop to be produced. Drip irrigation, which has been promoted by various development agencies (such as USAID in its TIPCEE program) for its positive aspects of minimizing evaporation and runoff, is currently not used in the Dangme East District. Even though drip irrigation provides for a more consistent flow of water, farmers are skeptical since each opening of the system serves only one plant and weed control is made more burdensome with farmers having to dig underneath the tubes to retrieve them. MOFA's Agricultural Extension officers need to ensure that farmers efficiently use the drip irrigation methodology and have the capability to maintain and manage the equipment.

How is land policy affecting the establishment of post-harvest infrastructure?

Once tomatoes are ripe and have been harvested, they are stored before being transported to the market or processing factories. The perishable nature of tomatoes means that post-harvest cooling facilities are essential to maintaining the crop once it has been harvested. It necessitates investment in the physical structure of a storage facility. Optimally a facility that includes access to electricity to cool the tomatoes and keep them as fresh as possible, which is especially important if the tomatoes are destined for the outdoor/fresh market.

At present, there are no post-harvest facilities available in Matsekope. Instead, farmers simply keep the tomatoes in crates, covered on top with tree branches and in the shade until traders arrive to inspect the tomatoes. The lack of post-harvest

cooling facilities increases farmers' vulnerability, especially when selling to the outdoor/fresh market. Traders are aware that farmers have no choice but to sell their crop as fast as possible, otherwise the crop will rot, thus giving traders the upper-hand when negotiating a price. Interestingly, although all the farmers in the sample survey were aware that there were no storage facilities in Matsekope, none of the farmers viewed this as a challenge. Instead, price negotiation with traders was noted most often (by 42 out of 44 farmers) as the key challenge in selling the tomatoes. The link between having better storage facilities and the ability to thus negotiate a better price for the fresh market was apparently not foremost in farmers' minds.

A cooling post-harvest facility requires energy, which will increase the price of the tomato sold to the trader. It is only beneficial to the farmer if the trader is willing to pay the augmented price. In this respect, any future planning regarding the type of post-harvest system that is put in place should erect a structure that is economically viable for farmers and traders. Several interviewees suggested that farmers should have a location where their produce can be evaluated, sorted, packaged by a third party, and then stored (within a cooling facility) at that location until it was ready to be shipped to market. This location – a warehouse for example – could be private sector or government-run. Neither the farmer nor the trader would be responsible for the issue of storage prior to transport, but a new third party would then be part of the chain – a party which needs to be given compensation for evaluating, sorting, packaging and storing the tomatoes.

While it is important for farmers to have access to post-harvest cooling facilities, it is of equal importance that not only farmers, but also the traders who transport the crop are aware of the effect that chilling has on tomatoes. Tomatoes are sensitive to chilling to varying degrees depending on their maturity. Proper temperature management once harvested and stored is crucial. The optimal temperature is between 10 and 25 degrees Celsius, however, the chilling periods for tomatoes while in the field, post-harvest storage, and during transit, have a cumulative effect.

(UNCTAD 2012). It is vital that farmers and traders know about the temperature requirements, so that post-harvest facilities may enhance and not diminish the quality of the commodity.

Summary – Land policy indicative of legislative and judicial governance

Farmers need access to land in order to farm on it, whether they produce for the outdoor/fresh or processing sectors. However, the type of access to land affects how a farmer participates in the sector. Land policy is indicative of legislative governance in that it establishes what type of access a farmer has to the land and thereby how that land can and cannot be utilized. In those cases where farmers rent the land, the dilemma exists in that the customary trustees may be content to rent out the land to these farmers, but might be hesitant to have farming infrastructure built on it, in case it limit possibilities as to how the land can be utilized in the future. The entities upholding the customary land policy also exhibit judicial governance in that they regulate land inheritance and ownership, ensure proper usage and resolve land disputes. Executive governance is not evident in the case study in that farmers are not being given assistance to meet the rules of land usage. Rather the rules are established and either the farmer does or does not accept them.

7.3: PRODUCT STANDARDS POLICY

When a farmer is cultivating, he or she knows that a certain quality of tomato must be produced in order for it to be sold to either the outdoor/fresh or processing market. Product standards establish the characteristics that must be present for the sale to take place. The ability to adhere to those standards directly affects if the farmer is able to participate in the value chain.

Product Standards Policy - Fresh Market

In Ghana there exists specific legislation (GS 922) issued by the Ghana Standards Authority (GSA) in 2007 regarding what qualifies as a fresh tomato that can be sold on the national or international market. The GSA standard for fresh tomatoes is largely based on the United Nations Economic Commission for Europe (UNECE) standards for fresh tomatoes (FFV-36) (GSB 2007c: ii).¹⁵³ The GSA legislation outlines specific requirements including limited defects/damage to the skin, necessary color, shape, sanitary and phytosanitary standards including freedom from pests and contaminants. Based on these requirements, the legislation also puts forth three classifications of tomato, in accordance with quality – Extra Class, Class I and Class II, as well as a size classification ranging from A to H with the latter being the largest size in diameter range. Basic packaging and labeling requirements for tomatoes are also outlined, with an encouragement “for parties to agreements based on this standard to investigate the possibility of applying the most recent editions” of six other standards, including a Codex standard on the Packaging and Transport of Tropical Fresh Fruits and Vegetables (CAC/RCP 44-1995), and the Codex standard on Principles for the Establishments and Application of Microbiological Criteria for Foods (CAC/GL 21-1997) (GSB 2007c: 1). There is no government or private entity however actively enforcing the GSA standard when it comes to the outdoor/fresh market in Ghana. Consequently, although there does exist a codified standard defining what a fresh market tomato should be, in day-to-day practice the standard has minimal impact upon what farmers produce or how they participate in the sector.

Lack of government communication to farmers about the GSA standard for fresh tomatoes – what it is and how to achieve it - is one of the key reasons why the standard is not being implemented by farmers. In 2010 MOFA asked GSA to conduct

¹⁵³ References are cited as “GSB” (Ghana Standards Board), since the publication was done in 2007, before the entity changed its name to the Ghana Standards Authority (GSA).

a survey to see how many tomatoes on the local market conform to the GSA standard. The survey focused on the 10 most populated markets (including those in the Greater Accra Region). According to the GSA, only 2 percent of the tomatoes conformed to the GSA standard.¹⁵⁴ GSA has prepared a template document in English explaining the standard. It is working with MOFA's Division of Agricultural Extension Services (DAES) and its Agricultural Extension Agents (AEAs) to communicate with and train farmers to put in place practices that will help farmers achieve the standard. A pictorial version of the standard is also available for farmers who are illiterate. Among the tomato producing regions in Ghana, the Greater Accra Region has the highest literacy rate with 89.3 percent being literate in a language, with 47.4 percent being literate in English and a second language (GSS 2013b: 63). In the Brong Ahafo Region there is 69.8 percent literacy in a language, with 48.2 percent literate in English and a second language (GSS 2013c: 63 and 64). In the Upper East Region, there is 52.5 percent literacy in a language, while literacy in English and a second language stands at 14 percent (GSS 2013a: 65 and 66). Placing international standards on a commodity that is largely sold on the national market can put small-scale tomato farmers at a disadvantage, especially if they do not receive the necessary technical support. Conversely, if those standards can be achieved, then it may make local produce more competitive with commodities that are imported into the country.

Another reason for lack of enforcement of the GSA standard for fresh tomatoes is that there is no legislation in place allocating a price to a specific quantity and set standard for tomatoes. Without a set price, there is less incentive to implement a standard. Price is directly linked to not only standards but also the quantity of the product. The GSA standard does mention Codex CAC/RCP 44-1995 as a reference for packaging, but in neither the GSA nor Codex document is there a specific

¹⁵⁴ Information based on interviews with GSA staff.

measurement outlined for crate size (GSB 2007c).¹⁵⁵ The Codex document on packaging and transport covers more general issues such as temperature, humidity control, and handling of the produce. It does though note “containers that are very wide and weigh more than 23 kg encourage rougher handling, produce damage, and container failure” (Codex 1995: 8). It recommends box standardization. “Due to the large number of different container sizes in use, box standards are desirable” (Codex 1995: 9).

An effort was made in 2007 by farmers in the Brong-Ahafo region to introduce a standardized size for crates with specific dimensions. The aim was that a set measurement for the crate would help curb disagreements between traders and farmers on quantity, but would also help to ease the physical strain for farmers and traders when having to carry the large crates currently in use. The commodity queen and traders are primarily concerned with the size and color of the tomato and most importantly, how well the tomato will transport – i.e. how quickly or not it will rot – and not with the GSA standard per se or the type of packaging.¹⁵⁶ The farmer’s main concern is to cultivate and sell as many tomatoes as possible with the amount of land and input supply available to him or her. Since most farmers sell their tomatoes to traders, it is ultimately the commodity queen and traders’ prerequisites as to what entails a “quality” tomato that is the deciding factor in determining which tomatoes are bought from farmers and sold on the marketplace. The selling price that the farmer agrees to is not based on a national set standard for tomatoes and their packaging, but rather is a more subjective decision made by the buyer (i.e. the trader) at the farm-gate.

¹⁵⁵ CAC/RCP 44-1995 is the Recommended International Code of Practice for Packaging and Transport of Tropical Fresh Fruit and Vegetables.

¹⁵⁶ Experienced traders are able to identify tomatoes simply by their appearance – such as for example that those which are oblong are from the Ashanti area in Ghana.

There are three GoG agencies working with the GSA in terms of providing input when it drafts standards for crops. The first is the Directorate of Plant Protection and Regulatory Services (PPRS) within MOFA. It is a technical directorate with a mandate to protect plant life (including crops) from developing pest and disease (MOFA 2017b).¹⁵⁷ The directorate is active in the following areas: regulation of seed (abiding by the 2010 Plants and Fertilizer Act), phytosanitary inspection, disease, and pest management. In the case of tomatoes, the directorate works with the GSA specifically on the establishment of sanitary and phytosanitary standards and provides input to the GSA standard. The second entity within MOFA is Crop Services, another technical directorate. It is responsible for facilitating and promoting the production of food, industrial, and export crops (MOFA n.d. Crop Services).¹⁵⁸ It collaborates with the GSA on crop standards with the aim of bringing forth improved production techniques. The third agency is the Ghana Food and Drugs Authority (FDA). Established in 1992 by the Food and Drugs Law of that same year, and under the responsibility of the Ministry of Health, the FDA was enacted to control the manufacture, importation, exportation, distribution, use, and advertisement of food, drugs, cosmetics, chemical substances and medical devices (Republic of Ghana 1992b). At first glance the FDA can easily be mistaken for the agency with the power to enforce crop standards since its mandate centers on public health and food safety. However, this is not the case when it comes to raw materials such as crops. In this respect, similar to the PPRS and Crop Services, the FDA provides input to the GSA when standards are being created.

The work of the FDA, PPRS, and Crop Services of course go beyond the work that they do with the GSA. Due to the PPRS' responsibilities in pest and disease management in crops, and the FDA's responsibilities in food safety and public health, both entities work closely with each other when risk analysis is to be done to

¹⁵⁷ Refer to MOFA website page: <http://e-agriculture.gov.gh/index.php/about-mofa/technical-services/pprsd>

¹⁵⁸ Refer to MOFA website page: http://mofa.gov.gh/site/?page_id=83

test for pest residues in crops. The PPRS works as well with MOFA's Division of Agricultural Extension Services (DAES) and its extension agents in the field (directly with the farmers), on Integrated Pest Management (IPM) practices. PPRS provides diagnostic services and a lab diagnosis on what should be done to control pest and disease, as well as workshops, trainings, and field demonstrations on seed growth. PPRS has also worked with the international organizations of AGRA and IFDC under the auspices of the Ghana Agro-Dealer Development (GADD) project to train agro-input dealers on the safe handling and application of agro-chemicals. The training in safe practices is information that dealers can pass along to the farmers who buy the agro-input supply products. Meanwhile, MOFA's Crop Services directorate also works with DAES and research organizations to facilitate the development and distribution of information pertaining to improved input supply, agronomic practices, and the management of soil and water resources.

Product Standards Policy – Processing Market

The GSA has also issued standard legislation (GS 246 of 2011) for tomato paste, whether it is destined for the national market or exported to international destinations. The GSA document is based on Codex (Codex Standards for Processed Tomato Concentrates – CODEX STAN 57 of 1981) as well as other regional and international organizations' regulations, including the African Organization for Standardization (ARSO), the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). The GSA defines tomato paste as "the product prepared by concentrating the juice of pulp obtained from substantially sound, mature red tomatoes (*Lycopersicon esculentum* P. Mill) strained or otherwise prepared to exclude skins, seeds, and other coarse or hard substances in the finished product" (GSB 2011: 1-2).¹⁵⁹ The definition specifically excludes tomato sauce, tomato ketchup, chili sauce and other similar products

¹⁵⁹ This definition also applies to tomato puree. According to GS 246, tomato paste and tomato puree are the same entity.

which are highly seasoned and include ingredients such as pepper, onions, vinegar and sugar. In fact, no added sugar is permitted in tomato paste according to the GSA standard. The quality criteria addresses a multitude of issues including color, texture, composition, contamination, and what defects are not allowed, such as the amount of mineral impurities (in this case sand), which is “not to exceed 0.1% of the natural total soluble solids content” (GSB 2011: 4).

The GSA standard for tomato paste does not limit the type of tomatoes that can be used to make paste. The document is specific about the characteristics that the paste must embody, but which tomatoes are used in this process is left up to the factories. Generally a processor wants tomatoes with less water content, a high (minimum 5 percent) Brix content (i.e. percentage of solids – mainly naturally occurring sugars and minerals - in a juice), and a low acidity level.¹⁶⁰ It is not uncommon for processing factories to provide input supply, especially tomato seeds to farmers. The factory wants farmers to utilize specific inputs in order to help ascertain a certain quality of tomato that can be used for processing. For example, the 2007 Production Agreement between the company (Expom) and farmers, stipulated the type of seed, fertilizer, insecticide and fungicide to be utilized by farmers (Minkah-Premo & Co., 2007). However, a missing component was that no cultivation training was given or stipulated in the Agreement. The input can only ascertain a certain quality of tomato, if effective cultivation practices are also followed.

One entity particularly responsible for ensuring that the tomato paste created in Ghana meets the GSA standard is the FDA. Not only does the FDA provide input to the GSA on tomato paste standards, but due to its responsibility for food safety and public health, in accordance with the international standard ISO/IEC 17020, the FDA has a product inspection department that determines whether a product and

¹⁶⁰ Based on interviews with the 3 processing companies, MOFA officials, a crop scientist, and an agricultural research institution.

production process meets the requirement of a given standard (ISO 2012).¹⁶¹ Hence tomato paste is subject to FDA inspection. The inspection determines if the paste meets the standards outlined in GS 246. Once the product receives FDA approval, it can move onto the national or international arena, ultimately reaching the consumer.

The Role of Agricultural Research Institutions

Agricultural research entities (public and private) play an important role in improving cultivation practices via communication of their investigative findings. Such information may facilitate the process whereby a product achieves a certain standard, allowing it to be sold on the market. Much attention, especially by public research institutions in Ghana, has focused on cultivation practices and providing scientific advice on what input supply is best suited for the outdoor/fresh market. Since the 1991 release of the National Agricultural Research Project, the government of Ghana has been trying to strengthen the country's agricultural research capacity in order to generate improved technologies and methodologies for farmers (World Bank 1991).

In the case study sample, all 44 farmers in Matsekope stated that they would like more access to input supply. Some of the farmers also stated that they would like to see more subsidized inputs available, especially fertilizer.¹⁶² At the time of research, a 50-kilogram bag of YARA fertilizer (NPK 15-15-15) cost 50 GHC on the local

¹⁶¹ The ISO is the International Organization for Standardization, while the IEC is the International Electro-technical Commission. The ISO/IEC 17020 of 1998 and updated in 2012 is the internationally accepted, general criteria necessary for the operation of bodies performing inspection. The documents can be found at: http://www.iso.org/iso/catalogue_detail?csnumber=29342

¹⁶² In total, 8 of the farmers said that they prefer to have more subsidized fertilizer available to them.

market.¹⁶³ When subsidized in the past, such a bag cost 26 GHC.¹⁶⁴ Farmers look to government, NGOs and donors to provide them with help, and in some cases subsidization, to obtain input supply. The thought process being that subsidization will encourage farmers to buy more, produce more, and hopefully earn more. But regardless of how much input supply a farmer can obtain, an important issue is what type and combination of input supply is best suited for producing tomatoes in both the outdoor/fresh and processing markets. Directly related to this is as well what technologies can help farmers achieve optimal productivity. For example there are an array of seeds currently used in tomato farming in Ghana. Farmers may use a variety of seeds in one production cycle, being unaware which type is best suited to the land they are cultivating on, or which is better suited for the fresh or processing sector. Another example is water supply. The FAO has called for the selection of irrigation practices to be based on the type of end-product required since tomatoes destined for the outdoor/fresh market have different irrigation requirements than those tomatoes destined for the processing market (FAO 2017a).¹⁶⁵ Agricultural research entities ought to be one of the first points of reference when farmers are deciding upon which market they should produce for and learning how they can best increase their productivity.

There are several public research institutions in Ghana. The Council for Scientific and Industrial Research (CSIR) is one of the most prominent public research entities in Ghana. Established in 1968 to advise the Government of Ghana, as well as to promote and coordinate scientific research among several ministries, there are 12 research institutes within CSIR, of which many are agriculture-related, such as the

¹⁶³ Based on field research and visiting stores at the local market in Kasseh, neighboring Matsekope.

¹⁶⁴ Based on interviews with farmers and MOFA officials.

¹⁶⁵ Refer to FAO website at: <http://www.fao.org/land-water/databases-and-software/crop-information/tomato/en/>

animal, crop, food, palm oil, soil, and plant genetics institutes (CSIR 2017).¹⁶⁶ The Crops Research Institute (CRI) within CSIR is working to improve the variety of tomato seeds that are currently in Ghana for both the fresh and processing market, as well as promoting understanding about how to combat common diseases such as the tomato yellow leaf curl virus (from the White Fly), blight, and bollworm. Other areas of CRI research include soil, chemical and fertilizer content. The universities in Ghana provide another platform for research, with several universities having faculties in agriculture dedicated to higher-level education in the field. Some examples include the University of Ghana in Legon (Accra), the University for Development Studies in Tamale, the University of Science and Technology in Kumasi, and the University of Cape Coast.

The Role of Agricultural Extension Services

Within MOFA, the DAES and its Agricultural Extension Agents (AEAs) provide assistance to farmers to cultivate tomatoes. MOFA established the Department of Agricultural Extension Services in 1987 in order to bring all MOFA extension services under one entity. From 1992 to 1999, the Government of Ghana implemented its National Agricultural Extension Project (NAEP) with the aim of establishing a unified agricultural extension system with strong research links, in order to promote technologies and farming practices that would increase production (World Bank 1992). At the time of its release, according to the document “about 45 percent of the nearly 3,000 staff at the department of extension services had little or no formal agricultural training” (World Bank 1992: 1). Stronger research-extension linkages, better mobility and living conditions in the field, as well as pre and in-service training of agents were emphasized in the policy document. Today the DAES and agricultural research institutes continue to work

¹⁶⁶ For more detailed information refer to the CSIR website: <http://www.csir.org.gh>.

The Cocoa Research Institute of Ghana (CRIG) was separated from CSIR in 1973 when it came under management of the Ghana Cocoa Board (COCOBOD).

together to create agricultural extension services for farmers via trainings and farm visits (MOFA 2011b). The core aim is to help farmers improve their cultivation practices.

Extension services provide information to farmers with the aim of improving crop quality and productivity. In 1992 the GoG with funding from the World Bank initiated the National Agricultural Extension Project. It promoted largely a Training and Visit (T&V) methodology, which involved regular field visits to and trainings for farmers. A range of extension approaches have since then been used, in particular the GoG has encouraged training farmers in the framework of Farmer Based Organizations (FBOs). The DAES encourages farmers to form groups, as it is more efficient to target a group for trainings, rather than one farmer at a time. In addition, group formation is also valuable when it comes to access to credit. Both the HP and regular bank loan programs encourage farmers to be members of some type of cooperative or FBO. Providing a loan to a group rather than the individual is a safety mechanism for credit entities. Peer pressure to pay back one's share of a loan is effective. In the case that an individual cannot pay back his or her share of the loan, then at least others in the group might be able to pay for him or her. The Ministry of Food and Agriculture is trying to have farmers think about an FBO as a business. If farmers are part of a group, then they will be more likely to obtain certain services, such as credit and training from government, NGOs and donors.

In order to establish an FBO in Ghana, the following criteria must be met:

- a) democratic election of a leader;
- b) by-laws or some form of constitution for the FBO; and
- c) legal registration, meaning a registration certificate from either the Attorney General Registry office or the District Assembly.¹⁶⁷

¹⁶⁷ According to the interview with the DAES office, MOFA is encouraging registration at the local levels since the district offices have the most direct contact with farmers. There is no minimum number of farmers needed to create an FBO.

The Farmer Based Organizations in Ghana range in focus and size from larger vegetable and fish groupings to smaller and more specific ones focused on a single commodity such as pineapples or cashews for example (MOFA 2017c).¹⁶⁸ In order to be a member of an FBO, there is often a monthly due, which varies according to each FBO and is used to cover operating costs. How often FBO members meet with each other to discuss issues, is also at the discretion of the head of the FBO and its members. At the time of field research, the nearest FBO for Matsekope tomato farmers was the Kasseh Farmers and Traders Cooperative Society, comprised of 65 members.

The difficulty with FBOs is that farmers do not see an immediate benefit from being in them, besides sporadic trainings and possible increased access to credit. Trainings are only provided for a specified amount of time, and as regards access to credit, some farmers are forced to leave an FBO if unable to pay their share of a loan. Resources are minimal. Groups often only meet if there is a specific issue to be discussed, rather than consistently using the forum as a platform for moral support or other informal discussions. In the case study sample, only one farmer was a member of an FBO. Currently, farmers do not view FBOs as effective, which makes them largely unsustainable. MOFA, via its “Policy Framework and Strategies for Developing Farmer Based Organizations in Ghana” is working on creating a legal framework for FBO development – including the development of written constitutions for all FBOs (MOFA 2010f). The aim is to allow FBOs to have accounts with accredited banks or other accredited financial institutions, ensure that FBOs maintain complete records of their assets and liabilities, build their capacity to prepare business plans, and facilitate access and entry into markets (MOFA 2010f).

A more participatory option for extension services, instead of having AEAs train farmers in an FBO setting, is the methodology of Farmer Field School (FFS). Developed by the United Nations Food and Agriculture Organization (FAO), the FFS

¹⁶⁸ MOFA has made available on-line a list of FBOs, which is regularly updated and can be accessed at: <http://www.fbosecretariatghana.com/?q=content/fbos-region-and-districts>

approach promotes hands-on learning in which small groups of farmers, led by a trained facilitator (i.e. possibly an extension officer) analyze and learn from each other what approaches work best in their specific situation. The methodology helps farmers obtain more knowledge and access to information about production methods and market information. Initially created and utilized by the FAO in 1989 to train rice farmers in Indonesia about integrated pest management (IPM), the approach has been broadened in its scope to include livestock and crop production. Today it is being used in countries all over the world from Asia, Africa, the Middle East to Latin America (Groeneweg et al., 2006).

A key element that sets the FFS approach apart is that it is participatory and interactive, with farmers taking the lead in discussions. The approach of agricultural extension officers providing trainings to farmers has traditionally been seen as *the* mechanism for technology and information transfer to farmers. However, such an approach can be inadequately adapted to farmers' needs. The FFS approach allows farmers to be involved in identifying the problems and in discussing, testing, and selecting possible solutions in order to ensure a sense of ownership and sustainability. It is the farmers who analyze their production methods, identify challenges, propose and test solutions, with the guidance of a trained facilitator who has agricultural expertise. By adding their own knowledge to a situation, farmers are eventually able to identify and adopt the technology and practice that best suits their needs to become more productive and profitable. Farmers learn by observing and discussing in groups. Depending on the size of the group, one or several farmers are selected to receive additional training so as to be qualified to train other farmers – all with the backup support of the main facilitator. AEAs can play a vital role in respect to the FFS approach by facilitating these sessions.

To become an Agricultural Extension Agent in the field, a three-year diploma in agriculture is needed following the completion of high school. Training for agricultural field agents is dependent on the MOFA District director and opportunities in the district. Each district has an annual planning session where

farmers are invited to share their concerns, and it is from this meeting that issues arise as to what training is required for farmers. Once a month AEAs have regional training sessions with Subject Matter Specialists (SMSs) for issues that cut across various districts, and every 2 weeks - funding permitting - they also receive training at the district level.

Within each district of Ghana there is a MOFA office, at which AEAs work to help farmers in their cultivation practices. In the Dangme East District there are approximately 30,000 farmers and 32 actively engaged AEAs.¹⁶⁹ Of the 44 farmers interviewed in Matsekope, only 4 noted that they had received agricultural training from AEAs in the past 12 months. Historically, the objective of agricultural extension services has been to train and address farmers' problems pertaining to cultivation. Although AEAs are helping farmers in their cultivation practices, more resources are needed to cover the entire district. Should AEAs be given more resources (such as money, training, personnel, equipment), then there would be potential for the role of agricultural extension to not only help train more farmers in cultivation practices, but to also go beyond this and address issues such as how cultivation methods should vary depending on if farmers are cultivating for the outdoor/fresh or processing sector. Increased monitoring of practices could also be done by AEAs. At present there is no entity which checks to see if farmers abide by the practices outlined in trainings. The information is given, but there are limited resources to ensure that the advice and training given is indeed being effectively followed and implemented by farmers.

Summary - Product standards policy indicative of legislative, judicial and executive governance

Product standards entail legislative governance since they establish product characteristics that must be present should the product be sold on the market. In

¹⁶⁹ Based on interviews with MOFA officials.

the outdoor/fresh market the GSA standard for tomatoes is based on Codex standards and is technically responsible for legislative governance. The FDA, PPRS and Crop Services provide input to GSA when standards are being drafted, thus they also indirectly exhibit legislative governance. The same applies to entities conducting agricultural research. Although not formally requested to give input, in every-day practice the GSA does take into account recent findings regarding agricultural research when developing policy and standards.

There is almost no Government of Ghana enforcement of the GSA standard for outdoor/fresh market tomatoes. This is primarily due to the lack of an enforcement agency and minimal government oversight and regulation of the fresh market. There is not enough communication between the government and farmers on what the GSA standard is and how to achieve it. Rather it is the trader and the commodity queen who determine if a tomato meets certain requirements before it can be sold at Makola market. These requirements are somewhat subjective, but generally it suffices if the tomato looks ripe, healthy, and does not deteriorate over the following day or two. They decide which tomatoes are bought at the farm-gate, the quantity and price. Neither the commodity queen nor the trader necessitate that the tomatoes meet the GSA standard.

Judicial governance in the fresh market is exercised by the commodity queen who ensures that the tomatoes reaching Makola market are of a certain quality and able to be sold. Traders buy the tomatoes at the farm-gate, but once the tomatoes enter the marketplace, the commodity queen has and does use her authority to reject tomatoes if she feels the tomatoes will not sell or are damaged. The FDA and PPRS also exhibit judicial governance in that they work together to do risk analysis for pest residues in crops. However, in the case study, none of the tomatoes grown by farmers were subject to the FDA and PPRS risk analysis. In every day practice, it occurs when there evolves a health concern about a particular product.

The Ghana Standards Authority demonstrates executive governance in the fresh tomato market when it works with MOFA (in particular DAES and its AEs) to provide information (i.e. template document, pictorial standards) to farmers about what the GSA standard is for fresh tomatoes.¹⁷⁰ The GSA creates the documents and the agents relay them to farmers. Although not done extensively as yet, it is something that the GSA and MOFA are working on to increase in frequency. The limited resources of DAES are an issue though, with not enough agents employed, limiting the number of farmers that can be reached in the district. How to cultivate a tomato is knowledge that is still largely passed along within farming families and accompanied sporadically by government extension services. MOFA (via DAES) is also responsible for executive governance by way of its work on FBOs. The Ministry of Food and Agriculture is encouraging farmers to create FBOs in order to facilitate farmer trainings, access to credit, and have FBOs serve as platforms for moral support and discussions where farmers can learn from each other. The PPRS and Crop Services directorates demonstrate executive governance when they work with DAES, via trainings and workshops for example, to relay information to farmers on how to improve cultivation practices. Particular to PPRS, it not only provides farmers with advice and training on seed growth and integrated pest management practices, but it has also trained agro-input dealers on the safe handling and application of agro-chemicals, which is information that should via dealers be passed onwards to the farmers when they buy the products.

In the processing sector, the standard for tomato paste in Ghana is based on the international Codex Alimentarius standards, enacted by the GSA. Similar to the outdoor/fresh market, the FDA provides input while the GSA takes into account the latest agricultural research in the field. The standard for tomato paste does not though necessarily affect farmers, since it does not specify what type of tomato is to

¹⁷⁰ It may be argued that Codex exerts executive governance in that it provides trainings to its members about its standards. However, it is an intergovernmental entity where countries are members and not farmers. It is still left to the Codex members (i.e. countries) to decide how knowledge of those standards will be passed onto its communities.

be used by factories in order to make paste. It is a decision left up to the factories. In this respect, although at first glance it may appear that GSA, Codex, and the FDA, are the only entities exerting legislative governance, this is not the case when looking at the situation through the lens of a farmer. The GSA, and indirectly Codex and the FDA exert legislative governance in that they determine what characteristics the paste must embody and thus factories may gravitate to a particular type of tomato, but it is flexible. Various types of tomatoes can be used in the processing stage, not only one in particular. For farmers it is thus the processing factory that exerts the most poignant legislative governance when it stipulates what type of tomato it will buy and what inputs are to be used in the cultivation stage. Such stipulations are not uncommon in contract agreements between processing factories and farmers.¹⁷¹

The international retailers also have the potential of exerting legislative governance. Technically, the GSA standard for paste is the overarching policy establishing the rules of what paste should be if it is to be sold on the market. The standard is indicative of legislative governance. However, the standard influences but does not necessarily determine what type of tomatoes the companies buy from farmers. Should the retailer put forth new standards – i.e. standards that abide by international and national laws where they operate but are more stringent and complex - then processing entities and farmers have to abide by them. The other option is for the factories to find other retailers to sell to, but transitioning all business transactions can be costly in terms of time, money, and expertise needed to access a new market. Moreover, in order to keep up with global competition, many international retailers want their consumers to know that they are up to date with the latest environmental, health, safety, and quality standards.

Under the auspices of food safety and in accordance with international standard ISO/IEC 17020, the FDA has a product inspection department, which determines

¹⁷¹ An example of such stipulations is outlined in the 2007 Production Agreement between the factory Expom and farmers in the Dangme East District. The Agreement is more thoroughly analyzed and discussed in the next section (Access to Markets) of this chapter.

whether a product and production process meets the requirement of a given standard. The FDA is the main entity responsible for judicial governance when it comes to adherence to the GSA standard for tomato paste. Although the paste standard is particularly important for the factory, it does not directly affect farmers. Rather, what affects farmers most directly is the internal decision the factory makes when it decides which tomatoes are to be bought. In this regard judicial governance is similar to that exhibited by the commodity queen in the fresh tomato sector - it is not always clear-cut. There is some guidance due to the GSA standard, but as stated earlier on in this dissertation, every day practice allows flexibility in the type of tomato that can be used for processing.

Executive governance is evident via the training that the PPRS, Crop Services and DAES provide to farmers on agronomic practices, including pest management and seed growth. Although this is work that affects fresh market tomatoes, it can also affect tomatoes cultivated for factories. This is especially the case if there is no specific type of tomato mandated to be utilized for the processing sector. Also, agricultural extension services that promote cultivation practices may be promoting practices that are not specific to a standard per se, but these practices can still help a farmer to obtain a better quality tomato and improve the chances of it being sold on the fresh or processing market. Executive governance is also evident when the processing factory provides some of the necessary input supply to farmers. The factory would like farmers to use specific input supply in order to ensure that a certain level of quality and standards are met. However, simply providing some of the input supply does not guarantee a quality product embodying specific standards. The cultivation procedures are just as important. Technically it is indicative of executive governance, but it remains debatable how much factories are helping farmers if they provide them with input supply without the requisite training in cultivation.

Institutions conducting agricultural research play an important role in the market when they communicate to extension agents the results of their research on issues

such as input supply combinations. However, they are not directly responsible for executive governance. Generally the personnel at research entities are not giving farmers directly the information or training, but rather work through an entity such as national government ministries.¹⁷² Research findings, whether applicable to the fresh or processing market, have no effect if there is not an entity actively conveying that information to the interested party. Conversely, the work of extension agents is less effective in helping farmers if it does not incorporate the most recent research. One area in the processing sector where research can play a greater role is in researching which seeds and cultivation practices are best apt to create tomatoes for solely the processing market. Due to the different agro-ecological zones, this would vary throughout the country.

7.4: ACCESS TO MARKETS

Once tomatoes are cultivated, they need to be sold. In the case of Matsekope, they are sold largely to the outdoor/fresh market, with all 44 farmers interviewed noting that they sold to traders, who bought the tomatoes and ensured their transport to the market of Makola in the capital city Accra. Only 2 of the farmers stated that they also sold to the processing sector – particularly, the factory Expom in Tema. But what factors influence and determines if a farmer sells to either market? Who are the actors and policies involved?

The commodity queen and her traders establish the rules determining which farmers have access to the fresh market, and thereby demonstrate legislative governance. Farmers are keen to sell, but in order to have access to one of the largest markets in the country they have to operate via GNTTA traders. The commodity queen and traders ensure that traders can reach farms and with the help

¹⁷² Agricultural research entities can indirectly be involved in executive governance on all policies affecting the cultivation *and* selling of tomatoes. However, the institutional arrangement of the public agricultural research entities in Ghana, suggest that their focus has been largely on input supply and cultivation methods (see CSIR 2017 and CRI 2017).

of drivers from the Cargo Driver's Union, transport the tomatoes to market. Traders, working with lead-boys, travel to farms to determine which tomatoes they will buy. The basis of the decision regarding which tomatoes are bought is based on the trader's judgment of what will sell at the marketplace. Meanwhile, the commodity queen takes responsibility for deciding the quantity of tomatoes allowed entry to Makola market. She makes sure that her traders comply with the trade association rules, including which days they can come to the market to sell tomatoes. Should traders not abide by the rules of membership, a fine is given depending on the decision of the commodity queen.

In everyday practice, for the tomato sector there is no government legislation enforced which regulates the trade of tomatoes at the outdoor market. In the case of Makola, the Accra Metropolitan Assembly (AMA) has only some oversight responsibilities. According to Legislative Instrument (LI 1500) of 1989, it is the responsibility of the AMA:

- a) "To build, equip, open, close, and maintain markets;
- b) To fix days and hours during each day on which a market may be held and prevent the sale and purchase of goods in markets on any day or at any hour except those fixed;
- c) To regulate and control markets including the fixing of and collection of rents and tolls" (Republic of Ghana 1989: 87).

The AMA thus controls which days and hours that the market operates, is responsible for maintaining basic market services such as latrines and garbage pick-up, as well as how much rent should be paid to the AMA to use the market space.¹⁷³ However, the specifics as to how it "regulates" trade in the market is non-existent on paper.

The lack of AMA regulation regarding the trade of tomatoes at Makola has created a vacuum, which has been filled by the GNTTA. The commodity queen plays a central

¹⁷³ A good overview of the state of play of markets under AMA jurisdiction is available from the Ghana Audit Service (Ghana Audit Service 2006).

role in determining the price offered for tomatoes at the marketplace. She affects the price by deciding which trader is permitted to bring in what quantity of tomatoes and on which day. “The restrictions result in monopoly control of the market where who can bring tomatoes as well as the total quantity are both closely controlled” (Ngeleza and Robinson, 2011: 4). By restricting access, the fresh market prices of tomatoes are kept artificially high. The process prevents an influx of tomatoes and a subsequent fall in the market price during the peak harvest season. The GNTTA and traders argue that in an unregulated market, the risks that they take on are higher than any other actor in the sector. Tomato production is seasonal and tomatoes are highly perishable. Depending on where the tomatoes are coming from within the country, it can take from one to several days, before a tomato is sold at Makola market after having been harvested from the field. The risk of not selling tomatoes or of selling them at a price that does not cover their costs is high. “By restricting access to the markets, they are more likely to sell, and less likely to sell at a loss” (Ngeleza and Robinson, 2011: 5).

Consumers, however, have to pay more than what they would normally pay without the market access restrictions and farmers are forced to sell fewer quantities of tomatoes to traders. Farmers do though have the option of selling to smaller, local markets located near their farms, such as the Kasseh market near Matsekope. However, when selling to these local markets farmers are responsible for the transport, which means that smaller amounts of tomatoes can be sold at a time. In addition, the local markets do not operate each day such as does Makola market. With the high perishability of tomatoes and no cooling post-harvest facilities available, the local markets offer some, but still limited opportunities for farmers unable to sell to traders who operate in the larger, urban markets.¹⁷⁴

¹⁷⁴ None of the farmers interviewed in Matsekope mentioned that they sold tomatoes at the local market in Kasseh in 2009. However, several farmers (4) noted that in the past they have sold tomatoes at Kasseh market.

There is minimal contact that a Matseko farmer has directly with an outdoor market the size of Makola. He or she does not necessarily know the asking price for their commodity at that market. Most often farmers have a ball-park figure in mind regarding the farm-gate and market selling price, based on their prior experience. There is a relatively new entity however in Ghana, Esoko, which provides average market prices, thereby allowing farmers to have a more complete picture as to what price range is realistically possible for their commodity.¹⁷⁵ Launched in 2008, Esoko was the first agricultural commodity index in Ghana, covering 34 markets across the country. Known as the Esoko Ghana Commodity Index (EGCI), it provides market price data of agricultural commodities. Via an established network of enumeration agents stationed at market centers, Esoko is able to obtain prices of agricultural products in real time and make them available to anyone via short messaging service codes (i.e. texts) on mobile phones, and places the information on its website. Individuals are not only able to access prices but can also browse available offers to buy, sell, or advertise their own products and services. Farmers are thus able to negotiate better prices for their commodity or at the very least perhaps sell it at another market for a more profitable price. Essentially Esoko is a match making system, linking farmers to markets and traders. What Esoko is trying to address is information asymmetry, where “one participant in the transaction has more market information, especially on prices, than the other, and uses it to his or her advantage” (Chowdhury et al. 2005: 1). Since fieldwork research, Esoko has been covering more markets across the country, diversifying its services and using updated electronic applications. More recently Esoko has started to also provide weather updates, information on better farming practices, as well as a helpline where farmers can call in and speak to agricultural experts on an array of cultivation topics such as disease control and the application of agro-chemicals.

¹⁷⁵ Description of Esoko in this section is largely based on a research interview with an Esoko representative. For more information about Esoko Ghana refer to its website at: <https://www.esoko.com/who-we-are/> (Esoko 2017).

Despite efforts to address information asymmetry, some challenges are still evident. At the time of research, the Esoko service had not yet reached farmers throughout Ghana in mainstream fashion. Although Esoko is continually evolving and trying to reach more farmers (it initially covered 5 key markets in Accra – Nima, Agbogbloshi, Kaneshie, Tema and Ashaiman) it still does not cover the largest market in the capital city – Makola market. The low use of mobile phones and Internet facilities in certain regions of the country can also not be discounted. Looking solely at the key tomato producing regions in the country, in the Greater Accra Region, of the population aged 12 years and older (2,980,912), 73.5 percent of them (2,191,910) use mobile phones (GSS 2013b: 46). In the Brong Ahafo Region 40.2 percent of people 12 years and older utilize mobile phones (GSS 2013c: 49). In the Upper East Region the figure drops to 24.2 percent (GSS 2013a: 53). Although use of mobile phones is high in certain areas, there is only a limited amount of the population aged 12 and above utilizing the Internet. In the Greater Accra Region a mere 18.6 percent of the 12 and older population uses the Internet (GSS 2013b: 50). In the Brong Ahafo Region it is 3.4 percent, and in the Upper East Region 2.3 percent (GSS 2013c: 53; GSS 2013a: 61). In the Dangme East District only 4.1 percent of those aged 12 and older use the Internet (GSS 2013b: 50). It is the lowest figure in the whole Greater Accra Region. This low figure may be due to the general lack of Internet facilities in rural communities.

Another issue that might affect farmer usage of Esoko services is the subscription fee. Esoko services on market prices were initially free, but this has changed with the implementation of different tiers of subscription. The most basic subscription cost is 56 GHC per year for mobile alerts on market prices, with the subscriber receiving an average of 10 alerts per week (Olayinka 2010: 6). While Esoko provides farmers with a good price reference point, it does not address the issue of how farmers actually obtain access to those other markets (i.e. how the tomatoes are to reach those markets). The potential is there though for Esoko to expand its services and help farmers become less vulnerable when negotiating prices with traders.

The other option for farmers, although limited, is to sell their tomatoes to a processing factory. At the time of research, Expom was the only tomato-processing factory in the Greater Accra Region. Of its total fresh tomato inputs, the factory procures only 7 percent from Ghana (Robinson and Kolavalli 2010c: 1). This is attributed to the lack of adequate production of fresh tomatoes in the country. The fresh tomatoes that Expom does though procure from Ghana are obtained from the Ada Plains, Volta Region and the Upper East Region.¹⁷⁶ Sometimes agro-enterprises in developing countries are at a disadvantage compared to agro-enterprises in developed regions, in that the sources of primary supply in the former can be unreliable with respect to quality, timeliness, and efficiency due to the small scale of the operation and geographical dispersion (Da Silva et al. 2009).

When working with farmers, Expom utilizes written contracts, establishing how the two actors will work together. In the case of the 2 farmers that sold to the processing sector, the 2007 “Production Agreement” between Trusty Foods Limited (today “Expom”) and a farmers’ association in the Dangme East District, established the basic rules of their working relationship with each other. It covered issues such as input supply, price, quantity, transportation, and dispute resolution. The 2 farmers who sold to Expom, operated farms that were 30 and 20 acres in size. These 2 farmers might have been best positioned to work with Expom since they worked on larger farms and produced more tomatoes than the other farmers. Closer analysis of the contract is needed though to determine if there are any other specific reasons why such a limited amount of farmers worked with Expom.

The 2007 Production Agreement stipulated that the farmers utilize specific inputs in order to help ascertain the quality of the tomato. This issue has been discussed in the previous section in terms of how it relates to standards. But it also relates to cost for the farmer. The Buyer (i.e. Trusty Foods Limited) provided the “tomato seeds, fertilizer, insecticide and fungicide”, but the total cost of this input supply would be

¹⁷⁶ Based on interview with Expom representative.

“deducted from the monies paid by the Buyer to the Farmer when purchasing the tomatoes” (Minkah-Premo & Co., 2007: 2). In effect, the company provided the seeds, fertilizer, insecticide and fungicide, but farmers had to pay for each of these inputs. The farmer had no choice as to which seed, fertilizer, or chemicals he or she would use, thus possibly paying more for inputs than if he or she was working independently. With the already limited access to credit experienced by farmers, such an arrangement could understandably deter a farmer from doing business with a factory.

The contract also prohibited farmers from selling to another party. The “exclusivity clause” (section 9) states “the parties agree that the Farmer shall sell all the harvested tomatoes at any particular point in time to the Buyer” (Minkah-Premo & Co., 2007: 3). The clause assured factories that they were the only entities buying the commodity. Farmers were hesitant to restrict themselves to only selling to processing companies, especially if they could be earning more by selling to traders. In the above-mentioned contract, farmers obtained 6 pesewas per kilogram if selling to the processing company. According to the written agreement, the purchase price for the tomatoes was “6 pesewas per kilogram” (Minkah-Premo & Co., 2007: 2). In the case study sample for this thesis, each kilogram of fresh tomatoes accounted for on average 37 pesewas at the farm-gate.¹⁷⁷ Whereas in a broader nation-wide sample, according to MOFA’s statistics, the average price per kilogram for tomatoes sold at the farm-gate was 1.08 GHC (MOFA 2011d).¹⁷⁸ Both the case study sample and MOFA’s official statistics demonstrate that at the farm-gate, farmers receive more from traders than the 6 pesewas per kilogram being offered by the factory. The low price farmers receive when selling to a factory is a key reason for the

¹⁷⁷ For the case study sample, total production at the farm-gate equaled 81,505.65 kg (i.e. 79,350 kg from the crates and 2,155.65 kg from the baskets), while the total revenue was 30,773 GHC, resulting in each kilogram being worth 37 pesewas.

¹⁷⁸ According to MOFA, the average farm-gate price for tomatoes in 2009 was 56.43 GHC for 52 kg, resulting in 1kg being worth on average 1.08 GHC.

limited interaction between farmers and the tomato-processing sector. For farmers it makes better economic sense to sell to traders.

An immediate question that arises is why the processing company would offer such a low price. The processing company does so because it is forced to compete with low priced imports of tomato paste. During the 1980s and 1990s, as part of the Structural Adjustment Program the Ghanaian government embarked on a privatization, deregulation and reduction in tariffs program. With GoG support for the tomato factories declining, import tariffs being reduced, and the large provision of subsidies that EU farmers were receiving at the time, importation of tomato paste into Ghana increased steadily since the 1980s. At the start of the new millennium, 13,051 tonnes of paste was entering Ghana, and the latest FAO figures place tomato paste imports at 109,513 tonnes for 2013 (FAO 2017c).¹⁷⁹

To be able to compete against imported tomato paste, processors in Ghana need to be able to source fresh tomatoes between 100-150 GHC per tonne (Robinson and Kolavalli 2010c: 3, ALL interview).¹⁸⁰ Meaning that between 10-15 pesewas per kilogram is the cost-efficient price for processing entities. This puts the Expom offer of 6 pesewas per kilogram in more perspective, although still a very low price. According to IFPRI, it is possible for farmers to farm profitably at even the prices of 100-150 GHC per tonne, as long as their yields are high enough – above 30 tonnes per hectare (Robinson and Kolavalli 2010c: 3). Over the past several years the national average yield for tomatoes in Ghana has hovered around 7 tonnes per hectare (FAO 2017b).¹⁸¹ The commodity queen and traders know that the processing factories have to compete with lower-priced imported products, and use this information to their advantage to outbid when possible the factories and offer farmers more money. At the time of research, of the 3 tomato processing factories in

¹⁷⁹ Refer to FAO website at: <http://www.fao.org/faostat/en/#data/TP>

¹⁸⁰ During interviews with ALL staff, reference was made to a price of 120 GHC per tonne.

¹⁸¹ Refer to FAO website at: <http://www.fao.org/faostat/en/#data/QC>

Ghana, only Expom was able to continue operations focusing largely on packaging paste and to a more limited extent processing tomatoes.

The 2007 Production Agreement between Trusty Foods Limited and the farmers had a Dispute Resolution section to address any disagreements that might arise between both parties. The Agreement allowed the parties to meet and discuss for up to 14 days in order to settle a dispute. Should this not be accomplished, then either party could upon written demand, request that the dispute be resolved under the Provisions of the Arbitration Act of 1961 or any statutory modification of it. "Nothing herein contained shall be deemed to prevent or prohibit either party from applying to the appropriate court, for urgent relief" (Minkah-Premo & Co., 2007: 4). The Agreement allowed for either party to take the other to court, should there be a disagreement that they could not resolve within 14 days. Although agreed to on paper, arbitration was not used when the Agreement was discontinued. This was primarily due to the lengthy court process and even if the courts ruled in favor of the processing entities, the farmers had limited collateral or equity to pay a fine. The dispute resolution mechanism outlined in the Agreement did not take into account the stiff competition that the processing sector would face from the outdoor/fresh market and the limited means of farmers to pay a fine.

Arbitration has been in practice in Ghana since 1961 following the passage of the Arbitration Act (Act 38). It has been the main legislation regulating arbitration in commercial and labor practices and has relied extensively on the court to achieve solutions to disagreements. In 2010 Ghana passed the Alternative Dispute Resolution Act, replacing the Arbitration Act. The aim was that the new act ease congestion in the courts by allowing parties other alternatives to settling their disputes. The new law provides the legal and institutional framework to facilitate dispute settlement via alternative dispute resolution procedures (Republic of Ghana 2010c). The terms of arbitration are established, where subject to specific qualifications, a person can be an arbitrator, as long as both parties agree to it. The disputing parties are at liberty to determine the number of arbitrators, however

should they fail to do so, then the Act requires the number of arbitrators to be 3 in total. Arbitrators must be impartial and are required to disclose any reason that they might not be so. The Act goes on to address other issues in relation to the arbitrator(s), such as revocation of authority, resignation, as well as the mediation of the disputes, the possibility of customary arbitration, and the establishment of an alternative dispute resolution center.

Summary - Access to markets indicative of legislative, judicial and executive governance

In the tomato processing sector, cultivation productivity on the farm influences the extent to which a factory is able to work with farmers. It is though not the only factor. Analysis of a past contract between Dangme East District farmers and Expom, showed that the content of that contract – particularly as regards to input supply, pricing, and to who/what entity the tomatoes can be sold to, also affect farmers' participation in the processing sector. In this respect the factory (Expom) was exhibiting legislative governance. A regional tribunal or high court could be invoked if farmers and the factory did not reach agreement over an issue within 14 days. The court system is representative here of judicial governance. It can be argued that farmers and the factory also exhibit judicial governance as they work together to come to a decision if there is disagreement. But in the case of the farmers, their role is not to actively audit or check compliance with the contract, but rather they raise issues as they become evident or a problem. Conversely, the factory plays a more dominant role in drafting and ensuring that the contract is adhered to by farmers. Executive governance it can be argued is somewhat visible in the processing sector when the factory, in an effort to ensure a certain quality of tomato for processing, stipulates and provides input supplies.

In the outdoor/fresh market, the commodity queen and her traders are responsible for legislative governance. Together they determine not only what characteristics the fresh tomatoes need to have, but the commodity queen also determines the

quantity that can be bought from farmers and then sold at Makola market. The commodity queen is also responsible for judicial governance in that she ensures that her traders comply with her trade association rules - such as the payments needed to become a member of the association, or to sell at the marketplace. Executive governance is demonstrated by the commodity queen, as well as the traders, lead-boys, and drivers in that they work together to ensure that specific tomatoes are identified, bought, stacked in crates and transported from the farm to the market. It is though policy that the GNTTA enforces, with farmers not having much choice in the matter if they want access to Makola market. Lastly, although not a mainstream entity at the time of fieldwork research, Esoko is also evident of executive governance. Esoko is evolving and expanding its outreach to farmers. It is evolving from an entity that mainly provided services that connected the farmer to other markets, to one that now also gives advice to farmers on cultivation practices via its helpline.

Table 14: Production Stage – Actors and Policies responsible for Legislative, Judicial and Executive Governance (Case Study of Matseko)

| | Actor(s) Responsible for Legislative Governance | Actor(s) Responsible for Judicial Governance | Actor(s) Responsible for Executive Governance |
|--------------------------|--|---|--|
| | | | |
| Credit Policy | | | |
| <i>Fresh Market</i> | - Financial Institutions | - Financial Institutions | - Financial Institutions |
| <i>Processing Market</i> | - Financial Institutions | - Financial Institutions | - Financial Institutions |
| | | | |
| Land Policy | | | |
| <i>Fresh Market</i> | - Customary | - Customary | - Not evident |

| | | | |
|-------------------------------------|--|--|---|
| | Trustees - Committee of Community Elders and village Chief | Trustees - Committee of Community Elders and village Chief | |
| <i>Processing Market</i> | - Customary Trustees - Committee of Community Elders and village Chief | - Customary Trustees - Committee of Community Elders and village Chief | - Not evident |
| | | | |
| Product Standards Policy | | | |
| <i>Fresh Market</i> | - GSA - Codex (indirectly) - FDA (indirectly) - PPRS (indirectly) - Crop Services (indirectly) - Agricultural Research Institutions (indirectly) - GNTTA (commodity queen and traders) | - FDA - PPRS - GNTTA (commodity queen) | - DAES (AEAs) - FBOs - GSA - PPRS - Crop Services - Esoko - Agricultural Research Institutions (indirectly) - GAIDA, IFDC, AGRA (indirectly) |

| | | | |
|--------------------------|---|---|--|
| <i>Processing Market</i> | <ul style="list-style-type: none"> - GSA - Codex (indirectly) - FDA (indirectly) - Processing Factory (Expom) - Agricultural Research Institutions (indirectly) - International Retailers (potentially) | <ul style="list-style-type: none"> - FDA - Processing factory (Expom) | <ul style="list-style-type: none"> - DAES (AEAs) - PPRS - Crop Services - Processing Factory (Expom) - Esoko - Agricultural Research Institutions (indirectly) - GAIDA, IFDC, AGRA (indirectly) |
|--------------------------|---|---|--|

Source: Author's interviews with stakeholders in the Greater Accra Region (2009, 2010, 2011), direct observation during fieldwork, and literature review.

Table 15: Selling Stage – Actors and Policies Responsible for Legislative, Judicial and Executive Governance (Case Study of Matsekope)

| | Actor(s) Responsible for Legislative Governance | Actor(s) Responsible for Judicial Governance | Actor(s) Responsible for Executive Governance |
|-----------------------------------|---|---|--|
| Access to the Fresh Market | <ul style="list-style-type: none"> - GNTTA (commodity queen and traders) | <ul style="list-style-type: none"> - GNTTA (commodity queen) | <ul style="list-style-type: none"> - GNTTA (commodity queen and traders) - Lead-boys - Drivers - Esoko |
| Access to the Processing | <ul style="list-style-type: none"> - Processing Factory (Expom) ^A | <ul style="list-style-type: none"> - Regional Tribunal or High Court | <ul style="list-style-type: none"> - Processing Factory (Expom) |

| | | | |
|---------------|--|--|--|
| Market | | - Processing Factory (Expom) - Farmers (indirectly) | |
|---------------|--|--|--|

Source: Author's interviews with stakeholders in the Greater Accra Region (2009, 2010, 2011), direct observation during fieldwork, and literature review.

^AThe farmer agrees to the contract and in that regard can be viewed as exercising legislative governance, but in effect the factory takes the leading role in terms of stipulating contract content.

Kaplinsky and Morris' three-tiered analysis approach provides insight to the various actors and policies that are responsible for governance in a value chain. The result of this governance analysis puts forth a rather complex overview of the context for farmers in Matsekope. It is useful, vital information when trying to understand the challenges of Matsekope famers in the fresh and processing tomato value chain. In the following final chapter a comparison will be made of the above-mentioned governance analysis with the challenges voiced by farmers during the interview process, to determine if there is any overlap.

CHAPTER 8: CONCLUSIONS

This thesis set out to identify and analyze the production and selling challenges encountered by tomato farmers, in the hope that it would help unveil the reasons for the low tomato productivity levels in Ghana. Value chain analysis of a single case study (the village of Matsekope) was utilized to analyze the tomato sector. Research included interviews with farmers to obtain first-hand information about what farmers qualified as challenges. The key conclusions of this research and possible next steps are discussed in this chapter.

8.1: VALUE CHAIN ANALYSIS

The value chain concept has been widely embraced as a framework for commodity analysis for several decades. The first book-length manuscript devoted to commodity chains appeared in 1994, edited by Gary Gereffi and Miguel Korzeniewicz. Building upon the commodity chain approach introduced in 1977 by Hopkins and Wallerstein, the book emphasized the global dimension and focused on the strategies and actions of firms operating internationally. It helped to explain features of the global economy when production, processing, marketing and consumption were not confined to a specific geographic area, and has since then been an analysis approach widely accepted and utilized by both practitioners and researchers. In later years, scholars began to replace the term “commodity” with “value” to better reflect how a product changes as it moves through the manufacturing process. While most of the attention has been placed on international inter-firm relationships, there has been and continues to be, variation in how value chain analysis is conducted by scholars and institutions. Examples in variation include the scale of the analysis - from including every process and transaction (starting at input all the way to the end-use consumer product) to selecting only a specific segment along the chain - or having the departing point for analysis be an actor in the chain other than the international firm.

Gereffi's analysis framework is comprised of the following elements: input and output, geographical destination, governance, and institutions. It was utilized as the basic model for research in this dissertation and produced the following results outlined here below.

a) Input and Output:

While the farmers in the case study sample in Matsekope did follow the basic steps outlined in the best practices upheld by MOFA, there was variation when it came to the brand of input supply, when, and how it was used during cultivation. For example, only 5 farmers utilized specific brands of seed. The rest of the farmers used whatever brand of seed they could get access to and afford, with 2 of the farmers using seed from the previous year's harvest of tomatoes. The variation in the amount of fertilizer applied is another example. The differences do not facilitate uniform production. Meanwhile written records (on input supply costs and revenue earned) as well as a national standard for the size of crates and baskets, were lacking in the case study sample, making it difficult to produce precise calculations. However, estimations were made based on the information available and direct observation during fieldwork research. The most expensive input supply cost for farmers was fertilizer, while the least expensive was irrigation, with all but 2 farmers being entirely dependent on rainwater. And while farmers in Matsekope did spend nearly 5 months of the year cultivating tomatoes, they produced relatively little income. Farmers made an average income of 454.71 GHC over the season, which translated into \$0.69 (U.S.) per day over those 5 months. Such a sum is below both the World Bank's poverty line of \$1.90 per day per person (World Bank 2017a).¹⁸² The income figure (equivalent to 3.03 GHC per day during the 5-month period) falls between the lower and upper poverty lines established by the GoG in accordance with its latest Poverty in Profile Report, meaning that during those 5

¹⁸² For more information on the poverty line, refer to the World Bank website at: <http://www.worldbank.org/en/research/brief/policy-research-note-03-ending-extreme-poverty-and-sharing-prosperity-progress-and-policies>

months of tomato farming, should farmers only be employed in this respect, then they may not always be able to purchase enough food to meet their daily nutritional needs. Finally, yield figures for tomatoes in the Dangme East District were low coming in at 5 tonnes per hectare in 2009, which was below the national average yield for tomatoes at 7.5 tonnes per hectare (MOFA 2010g: 11; MOFA 2010a: 16). The FAO places the Ghanaian national average yield for tomatoes that year even slightly lower at 7.2 tonnes per hectare (FAO 2017b).¹⁸³

b) Geographic Destination – Two Separate Markets:

The tomatoes cultivated by farmers in Matsekope are largely destined for the fresh market – specifically, the outdoor, Makola market in Accra. All 44 farmers interviewed sold tomatoes destined for this market. Conversely, processing factories have done minimal work with farmers in Matsekope, with only 2 farmers in the same sample stating that they had also sold to the processing factory Expom in the past.

The analysis showed that there are essentially two types of tomato value chains theoretically available to tomato farmers in Matsekope – the outdoor/fresh market value chain and the processing value chain. However, one of these value chains is far more accessible to farmers - the outdoor one. The processing sector is a key opportunity for farmers, but not an every-day reality. It has been difficult to analyze due to the limited participation of Matsekope famers in it. In order for the processing sector to materialize into a more viable market for farmers, a key factor is that the actual production of tomatoes needs to increase and improve, involving the right combination of input supply and cultivation tailored for processing.

¹⁸³ Refer to FAOSTAT website at: <http://www.fao.org/faostat/en/#data/QC>

c) Governance and Institutions:

Utilizing Gereffi's definition of buyer-driven and producer-driven classifications, it was evident that among the several necessary characteristics, an international component was particularly important. Only the processing sector included an international dimension via the exports of tomato paste. Analysis of the fresh market value chain in accordance to Gereffi's classifications was not possible because that very core international element was not present. There were no large, international retailers, brand-name merchandizers, trading companies, or transnational corporations involved in the outdoor/fresh market.

Of the two classifications, a buyer-driven classification best described the tomato paste value chain in Matseko. There was though a missing component - the international retailers did not play a central role in shaping decentralized production networks or stringently managing the standards for production and trade of the commodity. There was however the potential for retailers to do this in the future, which brought forth standards as a key issue and a possible challenge for farmers. The tomato-processing sector did though fall just short of qualifying as a purely buyer-driven value chain.

By not meeting all of the necessary characteristics of a buyer or producer-driven value chain, it begged the question of how should the outdoor/fresh and processing tomato value chains then be classified? Should there not be some type of governance model applicable to both markets? The inability to adhere to all the characteristics of a buyer-driven or producer-driven classification actually lends support to the argument that not all value chains can necessarily be classified as only buyer or producer-driven. Instead, there may be other forms of governance exhibited in the value chain. A more flexible and broader governance analysis was necessary - one that would not constrict analysis to purely the buyer or producer-driven dichotomy. Kaplinsky and Morris' three-tiered governance analysis was utilized to determine if it could better identify and explain farmer challenges and participation in the tomato sector.

The Kaplinsky and Morris governance analysis approach brought forth a multitude of actors and policies responsible for establishing, enforcing, and helping in the achievement of product standards, whether they be for the outdoor/fresh or processing value chain. The overall picture that evolved was a complex set of relationships between actors and the respective rules or legislation that they were enacting. What emerged was a deepened understanding of the context and challenges for farmers when operating in the tomato sector. Four key points emerged from this portion of the analysis.

The first point is the clear difference between codified, national, government legislation and how it differed from what farmers experienced in every day practice. More specifically, for the outdoor/fresh market the GSA had a codified, standard for tomatoes and therefore technically was responsible for legislative governance. But in day-to-day practice, the GSA standard was not being enforced in Ghana. Tomato farmers in the case study were not producing tomatoes based per se on a national standard. In addition to lack of enforcement of the national standard, there also was no price allocated to a particular quality and quantity of tomatoes. Instead, the GNTTA decided which tomatoes they would buy from farmers, based on their own standards of what they believed would sell for the most cost-effective price. It was actually the GNTTA that was responsible for legislative governance when it came to tomatoes destined for the outdoor market. An IFPRI study noted that its researchers observed that in Makola market higher priced tomatoes were those that were large, firm, and “visually pleasing” (i.e. free from blemishes), while the smaller tomatoes, although still visually good tomatoes, were sold at a lower price (Robinson and Kolavalli 2010b: 16). There was subjectivity in the process. The situation was somewhat similar in the processing sector. The GSA also had legislation (a standard) for tomato paste. Farmers, however, were not directly affected by the tomato paste standard of the GSA. There was not a particular seed systematically identified by either the factory or the GoG for only processing purposes. Rather, in everyday practice there existed a variation in the types of tomatoes that could be utilized for

processing. It was a decision left to the factories. So for the farmers the factory executed legislative governance each time its management made the decision about what input supply was to be used for cultivation and ultimately which tomatoes were to be processed into paste.

The second key point that emerged was the important roles played by agricultural research institutions, agricultural extension services, and how they work together. Both entities play an important role in providing executive governance. Research institutions are the main entities generating the information that can help improve farmers' cultivation methods and thereby obtain certain product standards. However, they need to work closely with extension agents so that the information is effectively transmitted to farmers. It is pertinent for both the outdoor/fresh and processing markets. With the necessary infrastructure already established in the country, there is potential for the tomato processing industry to grow. For this to happen, the actual production of tomatoes needs to increase and improve. Farmers cannot accomplish this on their own. They need help from research institutions and agricultural extension services to ensure that they are putting in place the most effective production practices for the processing market. The quantity of tomatoes is important, but so is cultivation of the most suitable type of tomato for factory processing.

The third point was the influential position of the GNTTA in terms of influencing the quantity and price of tomatoes at Makola market, making it difficult to track price formulation along the outdoor/fresh market value chain. Minimal GoG regulation of Makola market created a vacuum filled by the commodity queen and traders. The commodity queen was the gatekeeper to the consumer market in urban and semi-urban communities. She determined the amount of tomatoes allowed entry to Makola market on any given day, thereby affecting not only quantity, but also price. It is an effective process for preventing an influx of tomatoes and a consequential drop in price, especially during the peak harvest period. The practice also helps to ensure that as many tomatoes as possible are sold since tomatoes are highly

perishable. But it is a practice, which establishes the amount of supply to generate a an income which is different from the actual supply-demand curve. Lead-boys and drivers did not have a fixed income. Their incomes depended on the fluctuating Makola market price, as well as which traders they were working with, and how many crates were being transported to market. As the tomatoes moved along the chain, their packaging was also altered. The tomatoes arriving at Makola from the farm-gate were mixed into different batches. A crate that was bought at the farm-gate was not necessarily sold as one crate at Makola. For example, farmers quoted selling crates of tomatoes that ranged in sizes from 52 to 75 and 80 kg. Yet, when speaking with the GNTTA, crates sold at Makola market were referred to as possibly holding as much as 120-125 kg of tomatoes. Tomatoes from different crates were often mixed together into different containers (baskets, plastic bags, other size crates). The average consumer could buy a plastic bag of tomatoes – whatever would be enough to feed the family for one to several days - or it could be a basket, or small crate of tomatoes. All of these prices varied.¹⁸⁴ Ultimately, once the tomatoes left the farm-gate, there was divergence in terms of packaging, quantity, and price of tomatoes when they reached consumers at Makola market.

The fourth issue that emerged was how the international trading environment affected the outdoor/fresh and processing tomato value chains. Theoretically, the processing sector should be a good alternate market for farmers. However, for the factories in Ghana to effectively compete against imported tomato paste, the processors have to source fresh tomatoes for 100-150 GHC maximum per tonne, meaning between 10-15 pesewas per kilogram. The commodity queen and traders know that the processing factories have to compete with lower-priced imported products and use that information to bargain for a price at the farm-gate. The 2007 Production Agreement between Trusty Foods Limited (Expom) and a farmers'

¹⁸⁴ In addition to varying quantities of tomatoes being sold at different prices, "bargaining" for prices also took place. However, those selling the tomatoes most often kept close to their initial price and appeared to incorporate some leeway in the price for the bargaining aspect.

association in the Dangme East District, stipulated 6 pesewas per kilogram (Minkah-Premo & Co., 2007: 2). In the case study sample for this dissertation, each kilogram of fresh tomatoes accounted for on average 37 pesewas at the farm-gate. Farmers want to sell at the best possible price and as quickly as possible due to the tomato's perishability. The imported paste products are forcing factories in Ghana to obtain fresh tomatoes at such a low price that farmers are not induced to sell to the processing sector, but rather to sell to the outdoor/fresh market.

Separate to the challenges posed by the international trading system, there are still actions that can be taken to facilitate and encourage farmers in Ghana to sell tomatoes to the processing sector. Currently, the total amount of tomatoes being produced in Ghana is not enough to allow all three processing factories to operate at full capacity. According to the latest FAO statistics, Ghana produced 340,218 tonnes of tomatoes in 2013 (FAO 2017b).¹⁸⁵ If we look at the maximum capacity for each of the 3 factories, all together they are able to process a maximum of 1,000 tonnes of tomatoes per day (NSTC at 500 tonnes, Expom at 300 tonnes, and ALL at 200 tonnes per day).¹⁸⁶ In one year (365 days) the factories are thus able to process 365,000 tonnes of tomatoes. This processing figure exceeds the total national production figure by 24,782 tonnes. In addition, the tomatoes being produced are not necessarily being cultivated for – nor may they be appropriate for - the factories. Farmers are still cultivating with the outdoor/fresh market in mind. Not only does the level of production need to be increased, and along with that an increase in yield figures, but farmers need more training on how to cultivate specifically for the processing sector. That training can come from multiple sources, such as donors, the private sector, and the GoG, but it should include in the process one entity in particular – MOFA's agricultural extension agents - to ensure continuity in training into the future, even when projects have technically ended. To further encourage

¹⁸⁵ Refer to the FAOSTAT website: <http://www.fao.org/faostat/en/#data/OC>

¹⁸⁶ Processing capabilities based on interviews with representatives of each of the factories.

farmers, a limited time-frame of GoG subsidization of certain input supplies when farmers are cultivating specifically for factories, might help cover some of the costs and encourage farmers to produce and sell tomatoes to the processing sector. The most expensive input supply for farmers in Matsekope was fertilizer and second was tools to cultivate the land – particularly tractor services. Specific to tractor services, according to the latest WTO Trade Policy Report on Ghana (2014), the tractor-farmer ratio in Ghana stands at 1:1,500, suggesting that more access to tractor services in the future might have significant effects in terms of raising productivity (WTO 2014: 69). The allocation and enforcement of a more constant price for a certain standard and quantity of tomatoes should also help provide farmers with a better idea of their earning potential if they choose to sell to the processing sector. This would be a counterweight to the stress of price negotiations and fluctuations that farmers experience when selling to traders.

Governance analysis in accordance to Kaplinsky and Morris' three-tiered system highlighted the multitude of actors and policies involved in the outdoor/fresh and processing value chains. It provided a thorough overview of the context within which farmers have to operate in Matsekope. It also identified a number of challenges for farmers, including the difficulties of accessing perhaps the most basic requirements needed for farming - access to credit and land. The analysis also illustrated the disconnect between the national GoG legislation and everyday practice for farmers in both the fresh/outdoor and processing sectors, particularly when it came to product standards. The strong position of the GNTTA, the effects of imported paste on the entire tomato sector, and the importance of agricultural research institutions and extension agents to deliver pertinent information about farming practices to farmers, were all brought to the fore.

8.2: THE CHALLENGES FOR SMALLHOLDER TOMATO FARMERS

Via one-on-one and group interviews, tomato farmers in the rural village of Matsekope identified the main challenges that they encountered in both the

production and selling stages (see Table 16). The top challenge in the production stage was access to credit, followed by access to water (farming irrigation), access to tractor services, and finally access to farming techniques. The top challenge in the selling stage centered on price – price negotiations with traders, followed by fluctuations in the price during a season.

Table 16: Main challenges for tomato farmers in Matsekope
(Note: Each of the 44 farmers interviewed mentioned more than one challenge)

| Production Stage Challenges | Number of Farmers (out of 44 total) | Selling Stage Challenges | Number of Farmers (out of 44 total) |
|--------------------------------------|--|---------------------------------|--|
| Access to Money | 29 | Price Negotiations with Traders | 42 |
| Access to Water (farming irrigation) | 28 | Price Fluctuation ^B | 7 |
| Access to Tractor Services | 20 | | |
| Farming Techniques ^A | 12 | | |

Source: Author’s interviews with farmers in Matsekope during fieldwork (2010).

^A Farming techniques refer to cultivation practices.

^B Price fluctuation here refers to the range in price when farmers sell their crop - from the beginning of the harvest (i.e. a higher price) to the progression and end of the season (i.e. the price drops).

In order to corroborate information provided by farmers, analysis was done on how farmers execute tomato farming. The aim was to witness, identify and understand their daily activities and interactions with other actors in relation to this employment. The value chain approach was utilized under the premise that it could provide poignant insight about the sector from initial stages of cultivation to the sale

of the tomato. When comparing the challenges highlighted by farmers during the interviews (table 16) with the information obtained by way of the Kaplinsky and Morris governance analysis, a clear and definite overlap can be seen, corroborating the challenges voiced by farmers.

a) Access to money: Access to money was voiced most often (29 times) by farmers as a challenge in the cultivation stage. This overlaps with the governance analysis, which demonstrated that obtaining credit is a key challenge. Financial institutions wield rather strict legislative, judicial and executive governance. According to the case study findings none of the farmers interviewed had taken an individual or group loan from a bank. Farmers noted that bank policies on prerequisite savings, collateral, and their high interest rates were deterrents to requesting a loan. Difficulty to access credit affects the input supply that farmers can buy – such as fertilizer, seed, to even tractor services – the third most often voiced challenge in the production stage. Acquiring money to buy input supply is vital to producing tomatoes. Without money, input supply cannot be bought, tomatoes cannot be grown, and consequently the farmer cannot participate in the tomato trade.

b) Access to water (farming irrigation): The challenge of limited access to water overlaps with the governance discussion on land policy. Customary Trustees (as well as the Committee of Community Elders and village Chief in certain instances) are responsible for establishing the customary land policy and making sure that the community abides by the decisions of the trustees as regards use of the land. They are thus responsible for both legislative and judicial governance. The type of access to land that a farmer is given affects how the land is used and what infrastructure projects may be built upon it. In Matsekope, the farmers are dependent on rain for their tomato crop. A more consistent source of water (i.e. farming irrigation infrastructure) might benefit farmers. For farming irrigation to be incorporated into farms, the consent must be obtained from the customary trustee (head of the respective families owning the land), which very likely will also be affected by the viewpoints of community elders. It is interesting that the thought of altering the

land for production purposes was raised by only one of the farmers interviewed. In order to participate more effectively in the tomato sector, farmers need to be able to actively make investment decisions about issues that will affect their farming – such as irrigation and post-harvest infrastructure. For this to happen, they need to have a certain level of autonomy over the land on which they farm.

c) Access to farming techniques: The search for knowledge about farming techniques overlaps with the discussion on the executive governance exhibited by the agricultural extension agents. The case study demonstrated that agricultural extension agents are vital in helping to train and assist farmers in cultivation methods. Cooperation between the DAES and agricultural research entities is paramount. The discussion also brought to light the difficulty in obtaining resources for the provision of agricultural extension services. There are only a limited number of agents able to be out in the field helping farmers, which substantiates the farmers' concern that utilizing and understanding improved farming techniques is a challenge for them. Farmers are asking for more help. When it comes to access to farming techniques, farmers in Matsekope are in large part still dependent on their families and knowledge that has been passed down over generations. The notable difference among the farmers during cultivation was the variation in input supply products (seed, fertilizer, chemicals) and how they were utilized. Effective application of fertilizer in Matsekope is important due to the low organic content of the soil. The divergences in cultivation practices could be inhibiting production levels, the quality of the tomato, and thereby further affecting revenue and income.

d) Price negotiations: The challenge of price negotiations overlaps with the governance discussion on product standards. There exists a national standard for fresh tomatoes issued by the Ghana Standards Authority. These standards are not though being enforced. This is due in large part to simple lack of communication, but also because there is no national system in place allocating a price to a specific set of quality standards and quantity. In the outdoor/fresh market, it is the trader and the commodity queen who demonstrate legislative governance when deciding which

tomatoes will be bought – based largely on what is known from previous experience that will sell, and information received from the lead-boys on the quality of the harvests. Since they are working with national markets, the commodity queen and traders are primarily concerned with the size and color of the tomato and most importantly, how well the tomato will transport – i.e. how quickly or not it will rot – and not with GSA standards per se. It is ultimately their prerequisites as to what entails a “quality” tomato that are the deciding factors in determining which tomatoes are bought, at what price from farmers, and then sold at Makola.

e) Price fluctuation: When farmers voiced price fluctuation as a challenge, they were referring to the range in price for which they sell their crop at the farm-gate over the entire season. To a certain extent price fluctuation is dependent on the harvest time, but the case study analysis and governance discussion in the previous chapter on “Access to Markets”, demonstrates that the commodity queen wields some influence as well. When looking at the geographical destination of the commodity, the destination for fresh tomatoes from Matseko is Makola market in Accra. The commodity queen for tomatoes at Makola market decides though how many tomatoes will be sold and at what price. She restricts the quantity and ultimately affects the price of tomatoes to be sold on any given day. The system put in place by the GNTTA might help avert an overflow of tomatoes and maintain price levels at Makola market, however, consumers inadvertently pay a higher price for the product while the commodity queen and trader are more likely to sell all of the tomatoes before they perish. Farmers are de facto obliged to sell less tomatoes to traders, keeping in mind as well that Makola market does not only source tomatoes from Matseko, but from other regions in Ghana as well. Those farmers who cannot sell all of their tomatoes to traders, can sell to other smaller, nearby markets, however, it often requires assuming responsibility for transportation costs. Additionally, if more of the commodity is entering those smaller markets then the price in those smaller markets drops. This may be beneficial for a consumer, but forces farmers to sell perhaps at a loss.

8.3: WHAT'S NEXT?

The Parameters of Value Chain Analysis

The second objective of this dissertation was to contribute to the current debate concerning what the parameters of VCA research ought to be - where it should start and end - and if it can be used as an analytical framework when the departing point for analysis is the local farmer rather than the international firm. By utilizing VCA to identify and successfully corroborate farmers' challenges, this research demonstrates that VCA can be used to focus on a segment of a larger value chain and that the departing point of analysis does not necessarily have to be the global firm. The scale of analysis was directly influenced by the purpose of the research, which was to identify and analyze the challenges encountered by Matsekope tomato farmers when cultivating and selling the crop.

While information on input, output and geographical destination of a product is integral to VCA, the analysis is about more than tracking value and uncovering quantitative data. It is also about obtaining a better understanding of how and why a value chain operates as it does. In effect, price formulation and seeing specifically where value was added to the tomato at each stage was challenging in this research, and exposed the difficulty of executing a "traditional VCA" (i.e. tracking value at each stage) for an informal market where there is no standardization of quantity, quality or price. The governance component of VCA is key in explaining "the how" and "the why" of value chain operations. Gereffi's model attributes governance throughout the entire value chain to a single entity and its respective policies. For the purpose of this thesis, Gereffi's buyer-driven typology did provide a broad overview of the value chain and brought forth the important issue of product standards that need to be adhered to by particular actors. Standards adherence is definitely a key issue and can be a challenge for tomato farmers in Matsekope, but it is not the only challenge. Kaplinsky and Morris' three-tiered governance approach uncovered various challenges, provided insight as to why they existed, and corroborated the challenges

voiced by farmers during interviews. Their governance approach allowed for a more thorough context and understanding of how and why multiple actors, institutions, and policies operate within the value chain. It may serve as a governance model for other value chain research that wants to shift analysis from global inter-firm relations to other actors' interactions along the chain.

Kaplinsky and Morris' approach to analyzing governance may also allow for other classifications besides buyer or producer-driven to come to light. With the case study sample not qualifying as purely buyer or producer-driven, it demonstrated that not all value chains fall under these two categories per se. Research in this dissertation alone brought forth a series of actors and policies responsible for legislative, judicial and executive governance. It may be probable that other value chains have similar combinations of legislative, judicial and executive governance, leading to new classifications. It would though require extensive research covering multiple commodities.

Production, Access to Markets, and Oversight

In order to improve productivity levels in the tomato sector in Matseko, the GoG needs to address a number of issues specifically related to production - national credit policy, land tenure, enforcement of national standards for tomatoes, and increased support for agricultural extension officers. However, value chain analysis has shown that it is not only a matter of improving production - production is only part of the puzzle for farmers. Improved and increased production will contribute little to bolstering the livelihood of tomato farmers and will not be meaningful if there is not also a destination for those tomatoes. Farmers need to also effectively sell what they produce.

There is an informal outdoor market for fresh tomatoes, which is essentially in competition with the more formal, processing market. Lack of government oversight regarding this competition has created a vacuum, which has been filled by the

traders and the commodity queen. Farmers have the option of selling to the processing sector in addition to the outdoor/fresh market, however the processing sector is not able to compete with the outdoor market price. Competition from internationally imported, subsidized, tomato paste reduces the price that a processing factory such as Expom can offer farmers for their fresh tomatoes. In the past it was primarily competition from EU countries, in particular Italy. Currently it is China. China's economic presence and investment in Ghana is not diminishing, but rather there is a strong economic and trade relationship between both countries. China topped the Ghana Investment Promotion Council list for the highest number of registered investment projects in Ghana (GIPC 2015: 3). On the trade side, almost a fifth (17.2 percent) of all manufactured imports coming into Ghana are from China (WTO 2014: 22). In return, China relies on resource-rich countries such as Ghana for its natural resources, such as metals and petroleum, which are needed to run the industrial manufacturing sector in China. Meanwhile, the tomato sector in Ghana has not changed over the past decade. The only change is that China has emerged as another key player affecting the tomato sector in the African nation. Traders are able to "outbid the factories" by offering farmers more money, but thereby traders also know that farmers are vulnerable, since they have limited selling options other than selling to traders. A farmer's vulnerability is further increased when he or she is able to sell only a certain amount of tomatoes to traders, due to the GNTTA controlling the quantity of tomatoes entering Makola market. There needs to be more transparency and stability when it comes to price at the farm-gate, tomato trade at Makola market, and how farmers can access both the fresh and processing markets. Farmers need help to ensure *better* access to their current market (i.e. Makola) and *more* access to other markets, such as the processing one.

The potential exists to further expand the tomato paste industry in Ghana. At present, only one of the factories is fully operational. This is in large part due to the insufficient availability in Ghana of fresh tomatoes for processing. Improvement in the productive capacity of tomato farmers is important. It is improvement in current productive capacities combined with an understanding of what cultivation practices

best serve tomato-processing factories that is needed. Agricultural extension officers working in conjunction with agricultural research institutions have the potential, if given the resources, to play a larger role in training and providing advice in this respect to farmers.

Currently farmers in Matseko are placed in a tight position, one that does not induce them to produce more tomatoes for either the fresh or the processing sector. What a farmer sells to the fresh market is affected by what the trader and commodity determine is a “quality tomato” and by the quantity of tomatoes a trader is allowed to bring to Makola. The farm-gate price is rather subjective, controlled by traders and the commodity queen without oversight by an independent third party. Farmers are also not encouraged to sell to the processing factories due to the low price that these companies offer in order to remain competitive with imported tomato paste. At present there is little incentive for a tomato farmer to put more effort and time into improving cultivation methods and increasing productivity.

Health Concerns and Agro-Chemical Use

The majority of farmers in the case study sample used both fertilizer and other agro-chemicals to cultivate tomatoes, however as discussion in this thesis has demonstrated, there was variation in how farmers applied the products. The amount and type of training that a farmer in Matseko receives on how to handle and apply agro-chemicals is variable and dependent upon family, friends, GoG officials and input-dealers. In 2008 IFPRI conducted a survey of vegetables farmers in southern and central Ghana (including farmers in the Dangme East district). The study surveyed 384 farmers, of which 151 were tomato farmers. It found that of the 384 farmers, 86 percent used insecticides, with less than half having received training on the safe use of agro-chemicals and a third of them using more than the recommended levels on the labels of the products (Horna et al. 2008: 9 and 10). Other striking results were that less than half of the farmers (i.e. 46.5 percent) wore boots, only a quarter wore gloves, 11.8 percent wore goggles, and some ate (5.8

percent) and drank liquids (7.2 percent) during the application process (Horna et al. 2008: 9 and 10). All the farmers, except for 3, reported feeling particular side-effects after agro-chemical application. Examples include 69 percent of farmers reporting a burning sensation on their skin, 47 percent had headaches, 39 percent had itchy or watery eyes, 33.4 percent experienced dizziness, and 35.4 percent coughing and breathing difficulties (Horna et al. 2008: 9). At present there is no systematic GoG testing of farmers to determine the impact of pesticides on their health. Independent academic and scientific research is demonstrating however that the level of agro-chemicals in Ghanaian farmers' bodies is on the rise, including farmers who cultivate tomatoes (Ntow 2001; Darko and Akoto 2008; Botwe et al. 2011). Within MOFA, (the PPRS and DAES) work directly with farmers on pest management practices and with international organizations such as AGRA and IFDC to train agro-input dealers. However, there is no systematic and regular monitoring by the GoG of farmers in terms of how they apply agro-chemicals. The agricultural extension system needs to be equipped with more resources to monitor farmers and to train them on alternative, more eco-friendly methods of cultivation, while still addressing the need for greater yields.

When fertilizer and agro-chemicals are inappropriately used, not only is the health of the farmer put at risk, but it also affects the environment and the health of the broader public – consumers – who buy and eat the produce. Asante and Ntow (2009) refer to various studies done in Ghana, which demonstrate the increased prevalence of pesticides in vegetables, such as that by Amoah et al. (2006), which analyzed the pesticide contamination of vegetables in Ghana's urban markets. Random sampling took place of 180 vegetables purchased from 9 major markets in the cities of Accra, Kumasi and Tamale. Pesticide residues were found such as lindane, endosulfan, and even DDT, which technically has been banned from agricultural use in Ghana. Most of the residues identified and measured exceeded the national limit for consumption (Asante and Ntow 2009). GoG diagnostic services, including lab diagnosis, is not done consistently on fruits and vegetables sold at national outdoor markets. Often a health concern first develops and only

then testing of the commodity is done. The pesticide residues, if evident in crops, undoubtedly are also present in the environment. Analysis of pesticide residues in the Volta Lake, the largest man-made lake in the country, found DDT present in the sediment, causing concern for the long-term effects on fish and other aquatic species (Asante and Ntow 2009). Agro-chemicals are toxic compounds, dangerous to human health and the surrounding environment if not properly applied and managed.

Role of Youth and Women in Agriculture

With the majority of farms in Ghana being smallholder entities, such farming should not be overlooked. Rather it should be seen more as a small business requiring support that facilitates new farming technologies, practices, and access to markets. According to Ghana's Ministry of Finance and Economic Planning, the agriculture sector saw only a 0.04 percent growth rate in 2015, which is a decline from 4.6 percent growth the previous year (MOFEP 2015: 14). Such statistics bring forth concerns that agriculture, which is still a necessary component of the Ghanaian economy, is on the decline and losing its appeal. The latest Ghanaian national census report notes that youth are no longer as attracted to agricultural activities, with more of them interested in pursuing employment in Information, Communications and Technology (ICT) and related sectors (GSS 2013b: 129). The average age of the farmers may be used as a proxy to assess the involvement of young people in agriculture. In the case study sample, the average age among the farmers was 50 years. Considering that recent World Bank figures place the average life expectancy for a Ghanaian at 61 years of age, the average age of a farmer in Matsekope does raise concerns (World Bank 2017b).¹⁸⁷ In order to encourage youth to stay in agriculture as a business, and not to migrate from rural districts entirely, stability and profitability in the agriculture sector must be prevalent.

¹⁸⁷ Refer to World Bank website at: <http://data.worldbank.org/country/ghana>

Women also occupy a crucial role in agriculture. They are active as tomato farmers and in this particular case study proved to also dominate those roles relating to the distribution of tomatoes and access to local markets (i.e. the traders and commodity queen). The tomato sector will not flourish unless the critical role that these women play is fully understood before any type of policy or program (be it government or donor-related) is put into place. A gender-based analysis looking at the progression of agricultural feminization in the tomato sector and what challenges and opportunities it provides merits a closer look in a separate study.

Role of the Consumer

Household expenditure on food in Ghana accounts for the largest share of all expenditures (46.7 percent) (GSS 2014a: 137). Tomatoes are an important feature of that expenditure, since a variety of national dishes incorporate the crop. All of the 44 farmers interviewed in Matsekope noted that they used some of the tomatoes they cultivated for their own household consumption. Consumers can play an effective and powerful role when it comes to demanding the enforcement of product quality and safety standards. Such demands will help standards become more mainstream and it may just provide farmers with a better bargaining position in terms of price. Consumer advocacy is still in the early stages of development in Ghana. The issues of quality and potential health hazards are coming more to the forefront, but due to daily struggles to earn a viable income, the first priority is often still price and being able to obtain the product. There is no consumer protection law in Ghana or an entity responsible for consumer claims. National legislation in this field as well as effective efforts in raising consumer awareness about products is key.

8.4: CONCLUDING REMARKS

This research focused on obtaining a broader understanding of the tomato sector in Matsekope by analyzing the production and selling challenges encountered by tomato farmers. It is research that is pertinent for Matsekope, the national tomato

sector in Ghana, but also perhaps for other agricultural value chains, depending on how similar they are to the tomato sector. Increasing productivity and effective access to markets are current issues, but will continually need to be addressed in light of increased global trade, growing populations, land scarcity, not to mention climate change. Instead of having both a major and minor season for tomato cultivation, tomato farmers in Matsekope now essentially have just one season due to a decline in rainfall over the past decade. A Matsekope community elder and former farmer noted that over her lifetime she has seen the practice of agriculture in her village change substantially - especially as regards the incorporation of agro-chemicals in cultivation, and the increasingly delicate relationship between farmer and trader. The knowledge gained during this research is relevant to overall development efforts and serves as information as well as an opportunity for reflection to inquire what is currently being done, and can be done in the future, in the name of agricultural development.

Figure 13: Some members of the Matsekope community



Source: Picture taken in Matsekope by author during fieldwork (2010).

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APPENDIX 1: INDIVIDUAL INTERVIEWS WITH FARMERS – QUESTIONS

(Before starting, take note of name)

1. Is the interviewee male or female?
2. Age of interviewee?
3. Marital status of interviewee?

Household:

4. Does interviewee live in a household? If so, who is the main earner of that household? And who further comprises the household?

Education:

5. What formal education has interviewee had? Can the interviewee read and write in English? Can the interviewee read and write in another language?

Land – home dwelling and farm:

6. Does the interviewee own or rent the dwelling? The farm-land? If rent, to who are payments (monetary or produce) made and how much? Is there a written or verbal contract? If own, how did this come about?

7. What is the size of the farm?

Farming – Cultivation to Harvest:

8. How is livelihood sustained? i.e. what job(s) does the interviewee do? How much of job(s) done is taken up by cultivating and selling tomatoes?

9. Is the interviewee a member of a farming cooperative? If yes, which one and how big is it? What is the relationship between the interviewee and the cooperative?

10. Does anyone other than household members work on the farm? Are they paid, if yes how much?

11. How long is the tomato season – from planting to selling?

12. What is the water source for farming – i.e. rainwater, pump, dam, etc.?

13. What tools are needed for tomato production and does the interviewee own them? If does not own them, are they rented and what is the cost?

14. How much did the entire input supply cost and where was it obtained? Are there particular brand products sought? Is there a written record kept of the input costs? Would you like more access to input supply?

15. What was the total amount produced during the last harvest season? Is this typical? If no, what is? Are written records kept?

16. How is the crop stored after harvest? Is there a specialized postharvest storage facility available?

17. Is the harvest normally treated with any chemicals? If yes, what type of chemicals? Was the most recent harvest treated with those chemicals?

18. What amount approximately of the crop planted was lost? Why was it lost? Is this typically what normally happens? If no, what is typical?

19. Is any of the crop used for personal / household consumption? If yes, how much approximately? Is the remainder of the crop sold?

20. What are the main challenges in the production of tomatoes?

21. During the past 12 months, what training has the interviewee received in regards to tomato farming? From who / which entity? If yes, how long was the training and does the interviewee believe it was useful? If useful, how so (i.e. more output due to a specific technology for example)? If not useful, why not?

22. How does the interviewee generally receive agricultural information about production?

Selling:

23. Most recently, how much of the tomato harvest was sold and how much revenue did this amount to approximately? Are written records kept on output and revenue?

24. To where was the harvest sold – independent traders, market(s), processing factory(ies), retailers, wholesalers, for export?

25. How is the crop transported – i.e. from farm to market?

26. What is the revenue earned spent on? Is this amount of revenue typical? If no, what is typical?

27. What are the main challenges in the selling of tomatoes?

28. During the past 12 months, what marketing/selling training has the interviewee received in regards to tomatoes? From who / which entity? If so, how long was the training and does the interviewee believe it was useful? If useful, how so (i.e. better access to markets for example)? If not useful, why not?

29. How does the interviewee receive information in relation to the marketing /selling of tomatoes?

Credit:

30. In relation to tomato farming, has the interviewee attempted to contract any loans? If yes, why was / is the loan being requested? If not requesting a loan, why not?

31. Has the interviewee been successful in obtaining the loan? Was a certain amount of guarantee / collateral needed? How are re-payments being made? What is the interest on the loan?

32. If not successful in obtaining the loan – why does the interviewee believe this is the case? What reasons was the interviewee given by the financial institution?

Various:

33. During the past 12 months has the interviewee received any visits from agricultural extension agents? If yes, how many visits and what was the purpose of the visits?

34. To which of the following has the interviewee had access to over the past 12 months and if yes, how was that access obtained (i.e. bought, rented, donor program, etc.)? Does the interviewee feel he or she needs more or less access, and why?

- Fertilizer
- Chemicals
- Seed
- Irrigation
- Land
- Electricity
- Roads
- Markets

35. How are you preparing for the next season?

36. What do you think about the possibility of having a processing factory to sell to where you could obtain a constant price for the tomatoes?

APPENDIX 2: GROUP INTERVIEWS WITH FARMERS – QUESTIONS

(Before starting, take note of names, age, and whether they are male or female)

1. What is the size of the farm on which you work?
2. Do any of you own the land on which you farm?
3. What is your water source for the farming – i.e. rainwater, pump, dam, etc.?
4. Where do you get your input supply? Are there particular brand products sought? Would you like more access to input supply?
5. What tools are needed for tomato production and do you own them? If you do not own them, are the tools rented?
6. Where do you obtain the money from to buy the input supply? Banks? Relatives? Friends?
7. How is the crop stored after harvest?
8. To whom / where was your harvest sold?
9. What are the main challenges in the production of tomatoes?
10. What are the main challenges in the selling of tomatoes?
11. During the past 12 months, what training from agricultural extension officers have you received in regards to tomato farming, marketing / selling? Have you received training from any other entities?
12. What do you think about the possibility of having a processing factory, where you could obtain a constant price for the tomatoes?