AN ASSESSMENT OF THE CONTRIBUTION OF COTTON PRODUCTION TO LOCAL ECONOMIC DEVELOPMENT IN SISSALA EAST AND WEST DISTRICTS

By

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DECLARATION

I hereby declare that this work is my own work towards the Master of Science in Development Policy and Planning and, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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> The heavens are telling the glory of God; and the firmament proclaims his handiwork. Day to day pours forth speech and night to night declares knowledge (Psalm 19:1-2).

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Abstract

Millions of poor households secure their livelihoods from the cultivation of cotton the world over. In most developing countries, cotton production contributes about 40 percent of exports and about 5 percent of Gross Domestic Product. Cotton production in Ghana however has, remained a subject of concern to policy makers and other development stakeholders for some time now due to the poor sector performance. The objective of this study was to assess the contribution of cotton production to Local Economic Development in the Sissala East and West Districts. The study was an exploratory case study which utilized both quantitative and qualitative types of data both of which were accessed from primary and secondary sources. The tools used for data collection included questionnaires, interview/FGD guides/checklists. The data collection methods included Focus Group Discussions, structured, semi structured and unstructured/informal interviews and questionnaire surveys. A sample size of 335 was obtained from a total sampling frame of 2589 at 95% confidence and a margin of error of 5%. Findings of the study show that, the entire Sissala land has a huge potential for the cultivation of cotton even without the use of fertilizer. It is was also established that, cotton production creates more employment opportunities for the people than other crops due to its numerous value chain processes which further translate into improved income levels of cotton farmers. The study again discovered that farmer attitudes towards cotton production in terms of input diversion remains a major challenge to efforts aimed at revamping the cotton sector in the districts. The study recommends that, cotton farmer associations, cotton producing companies, and the government through the districts assemblies should harness the needed synergy to salvage the rather promising cotton industry in the districts through input subsidies, improved peer monitoring on the usage of inputs supplied to the farmers for cotton production, and the institution of schemes to reward hardworking farmers, Cotton Production Assistants and farmer groups who are able to repay in full their indebtedness to the companies.

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List of Acronyms

ADB	:	Agricultural Development Bank
AFD	:	Agence Francaise Developpement
ANOVA	:	Analysis of Variance
APA	:	American Psychological Association
ASALGP	:	Australia South Africa Local Governance Partnership
ASS	:	Agricultural Statistics Service
BNM	:	Basic Needs Model
C-4	:	Cotton-Four
CDA	:	Cotton Development Authority
CDP1	:	Cotton Development Project
ce**D**	:	community economic Development
Ced	:	Community economic development
c**E**d	:	community Economic development
CFA	:	African Financial Community
COM	:	Community Ownership and Management
CPA	:	Cotton Production Assistant
CPAs	:	Cotton production Assistants
CPC	:	Cotton production Companies
CSOs	:	Civil Society Organizations
DADU	:	District Agricultural Development Units
DADUs	:	District Agricultural Development Units
DAs	:	District Assemblies
DEFRA	:	Department for Environment, Food and Rural Affairs
DGPSA	:	Direction Générale des Produits de Santé et des Aliments
DHS	:	District Health Service
DMTDPs	:	District Medium Term Development Plans
DW	:	Decent Work
ED	:	Economic Development
EDIF	:	Export Development and Investment Fund
EJF	:	Environmental Justice Foundation

EPA	:	Environmental Protection Agency
FAOSTAT	:	Food and Agricultural Organizations Statistics
FASDEP	:	Food and Agriculture Sector Development Policy
FBOs	:	Farmer Based Organizations
FGD	:	Focus Group Discussion
GCCL	:	Ghana Cotton Company Ltd
GDP	:	Gross Domestic Product
GHS	:	Ghana Health Service
GLSS	:	Ghana Living Standard Survey
GNA	:	Ghana News Agency
GNI	:	Gross National Income
GNP	:	Gross National Product
GoG	:	Government of Ghana
GPRS I& II	:	Growth and Poverty Reduction Strategy
GSGDA	:	Ghana Shared Growth and Development Agenda
GSS	:	Ghana Statistical Service
GSSP	:	Ghana Strategy Support Programme
GTZ	:	German Technical Cooperation
HDIs	:	Human Development Indices
IFPRI	:	International Food Policy Research Institute
ILO	:	International Labour Organization
JSS/JHS	:	Junior Secondary School/Junior High School
LED	:	Local Economic Development
LEDA	:	Local Economic Development Agencies
MDA	:	Ministries, Department and Agencies
MDGs	:	Millennium Development Goals
METASIP	:	Medium-Term Agricultural Sector Investment Plan
MMDAs	:	Metropolitan, Municipal and District Assemblies
MoA	:	Ministry of Agriculture
MOFA	:	Ministry of Food and Agriculture
MOFEP	:	Ministry of Finance and Economic Planning

MoTI	:	Ministry of Trade and Industry
MS-Excel	:	Microsoft Excel
NDPC	:	National Development Planning Commission
NGOs	:	Non-Governmental Organizations
ODI	:	Overseas Development Institute
PDL	:	Plantation Development Limited
PPSCD	:	Participatory Planning for Sustainable Community Development
RCCs	:	Regional Coordinating Councils
SEDA/SWDA	:	Sissala East District Assembly/Sissala West District
SPSS	:	Statistical Package for Service Solutions
SSA	:	Sub Saharan Africa
SSS/SHS	:	Senior Secondary School/ Senior High School
UN	:	United Nations
UNCTAD	:	United Nations Conference on Tariffs and Trade
UNDP	:	United Nations Development Programme
UNEP	:	United Nations Environment Programme
UNIDO	:	United Nations Industrial Development Organization
USA	:	United State of America
UW/R	:	Upper West Region
WAE	:	World Agriculture and Environment
WB	:	World Bank
WEC	:	World Employment Conference
WHO	:	World Health Organization
WTO	:	World Trade Organizations

CHAPTER ONE
GENERAL INTRODUCTION

1.0 Background to the Study

Although Local Economic Development (LED) as a concept dates back to the 1960s and 1970s (Pretorius and Blaauw, 2005), it was not until the late 1990s that its emphasis on enterprise development, improving infrastructure, building local partnerships, promoting an inclusive and dynamic framework for progress became a dominant development strategy (World Bank, 2003).

The significant contribution of Local Economic Development (LED) as a sustainable development strategy in both the developed and developing countries cannot thus be overemphasized. LED approaches focus on enhancing competitiveness within localities with the view to enhancing inclusive and sustainable growth encompassing governmental and non-governmental functions. It has also often been seen as local people working together to achieve sustainable economic growth to generate economic benefits and improvements in quality of life. (Davis and Rylance, 2005; World Bank, 2003; Rodríguez-Pose and Tijmstra, 2009; also see Gwen et al., 2006; ILO, 2007; World Bank, 2007; Parray and Syebubakar, 2008).

In the view of Bartik (2003), Local Economic Development connotes the capacity of a local economy to create wealth for local residents through the productive employment of such local resources as labour and land. LED can also be defined as a process in which several development stakeholders work in synergy in designing and implementing initiatives usually at the local level in order to revamp and stimulate growth in a local economy. The LED approach has become a major development paradigm for most developing countries due to the failure of the top-down macro-level perspective development planning (which characterized economies of these countries) to effect the desired growth that was expected to accompany centralized planning for development (Satterthwaite, and Tacoli, 2003).

Driving the adoption of LED approaches has also been the underlying belief that involving local level stakeholders in at least some aspects of project design and implementation creates a closer link between development aids and their intended beneficiaries which is a key ingredient in engendering sustainable development (Mansuri and Vijayendra, 2013, Todaro and Smith, 2009). Baha et.al. (n.d.) notes that, LED is a strategic approach and process where the communities continually try to upgrade their competitiveness within their local business environments through a myriad ways and models.

In a study on the Role of Local Economic Development Agencies (LEDA) on territorial development and the whole macroeconomic goal achievement, Baha et.al. (n.d.) argue that Local communities respond to their LED needs through the following approaches:

- Encouraging new entrepreneurships;
- Supporting small and medium sized businesses;
- Attracting investment from elsewhere (locally, nationally and internationally);
- Investing in both hard and soft infrastructures (including human resource development, institutional support systems and regulatory issues); and
- Working together to create a good quality of life.

The success of any society today depends on its ability to adjust its efforts to the active local, national and international market economy. LED is thus a durable partnership between all community driving forces including the private sector, non-governmental organizations and local government authorities among others which seeks to highlight key issues and opportunities facing a local economy with the view to gathering efforts to build a strong sustainable local economy. It can be inferred from the foregoing that, if the principles espoused in LED approaches by its promoters are applied to agricultural development of Ghana, there is the possibility of stimulating agricultural sector growth for an overall sustainable national development.

The Agriculture sector is fundamental in the development of economies of both developed and developing nations the world over. In the developing countries in particular, agriculture remains a core poverty reduction and economic growth propelling activity which

contributes greatly to the Gross Domestic Product (GDP) and foreign exchange earnings of these countries (World Bank, 2008, FAO, 2005, Aasoglenang, et. al. 2013).

In Ghana in spite of the stronger growth and transition in both the Industry and Services Sectors over the past five years, the important contribution of agriculture to GDP cannot be underestimated (Alessandroet et. al 2012; MoFEP, 2011; MoFEP, 2012; MoFEP, 2013).The agricultural sector continues to make significant contributions to GDP contributing about 22.7 percent in 2012 and 21.3 percent in 2013 (MoFEP, 2014 pp.32) and serve as a means of livelihood to about 50.1 percent of the economically active population in Ghana (Olavalli, et. al, 2012; GLSS 6, 2013). Governments of Ghana (GoG's) over the past few decades in reaction to the constitutional provisions in the Directive Principles of State policy (Constitution 1992); which requires that policies leading to the establishment of a just and free society are pursued by the state have formulated and implemented a myriad of policies and programmes to accelerate the growth of the economy and raise the living standards of the people.

These include; Ghana Vision 2020: The First Step (1996-2000); the First Medium-Term Plan (1997-2000); Ghana Poverty Reduction Strategy (2003-2005); and the Growth and Poverty Reduction Strategy (2006-2009), the Ghana Shared Growth and Development Agenda (GSGDA) (2010-2014) among others. In line with the overall policy direction of the Medium Term Plan (GSGDA, 2010-2014) which seeks:

> To lay the foundation for the structural transformation of the economy within the decade ending 2020, through industrialization especially manufacturing, based on modernized agriculture and sustainable exploitation of Ghana's natural resources, particularly minerals, oil and gas,

The Ministry of Food and Agriculture over the medium-term has been tasked to accelerate the modernization of agriculture through the implementation of the Food and Agriculture Sector Development Policy (FASDEP II) and its counterpart Medium-Term Agricultural Sector Investment Plan (METASIP). The logic is that, modernizing agriculture will contribute to rural development and a reduction in the incidence of poverty of the more than 4.2 million people who are engaged in agricultural related activities (GSS, 2000). It is worth noting that, this viewpoint is consistent with results of a study by the Ghana Strategy

Support Programme (GSSP) of the International Food Policy Research Institute (IFPRI), which show that growth led by the agricultural sector is more effective in reducing poverty both at the national level and in the poor regions because of the strong linkages between income and consumption.

In a bid to accomplish the overall policy goal therefore, MoFA selected cotton as one of the industrial crop for which certain agro-ecological zones in the country have the comparative and competitive advantage at producing (FSADEP II, GoG Budget, 2013). Output from cotton production, it is expected, to serve as raw materials of local textile industry and exported to other regional or international markets. Due to the challenges to the cotton sector, there has been the need for a cotton sector revival if the expected gains could be obtained (Philippe, et. al. 2011, UNIDO, 2012, MoA and MoTI, 2011).

The role of the cotton sub-sector as a potential catalyst to economic development cannot be overemphasized. Cotton is an important cash crop to about fifteen (15) Sub Saharan Africa (SSA) countries. Walter-Echols (2006) in Environmental Justice Foundation's report (2007) notes that up to 99% of the world's cotton farmers live and work in the developing world, where cotton is predominantly a smallholder crop grown by the rural poor. Poulton and Hanyani-Mlambo (2008) observed similar small-holder dominance of the cotton farmers in Zimbabwe in a background paper prepared for a comparative analysis of organization and performance of cotton sectors in Sub-Saharan Africa.

In a study, Goreux (2003) contends that, cotton has a strong poverty reduction propensity because it is cultivated in small family farms and thrives well in areas where opportunity for growing other crops are very limited and per capita income is very low. Baffes (2003) in a study to analyze the effects of price and market distortion to the livelihood of cotton farmers in developing countries notes that, cotton is important to developing countries notwithstanding its small share in world trade. Baffes posits that, cotton accounts for approximately 40 percent of export earnings in Benin and Burkina Faso, and 30 percent in Chad, Mali, and Uzbekistan and contribute between 5 and 10 percent to GDP in most of these developing countries. According to Baffes (2002), Cotton is Tanzania's largest export

crop, contributes about $90 million to export earnings and provides employment to about half a million rural households.

In Ghana, Cotton production over the years however has been erratic and declining notwithstanding the suitability of most of the ecological zones in the country particularly those of the three northern regions for its production. cotton production in Ghana has declined drastically from about 38,000 tons (FAOSTAT, 2010) in 1999 to 2,500 tons in 2010 (MoFA and MoTI, 2011) representing a 34 percent decline over the period. Ghana's production, which has experienced steady decline since the 1980's, as noted by the United Nations Industrial Development Organization (UNIDO), (2012) accounts for less than 1% of the total cotton production in West Africa. Since the cotton sector can contribute greatly in reducing poverty as noted by Geroux (2003), GoG recognizes the revival of the cotton industry as a key to the reduction of poverty in the poorer northern regions of the country. The Poverty profile of northern Ghana has been cited as 52 percent, 70 percent and 88 percent for Northern, Upper West and Upper East regions respectively (GLSS 5). Philippe et., al. (2011) argue that, GoG's inspiration at revitalizing the cotton industry is also due in part to the success of neighbouring Burkina Faso's cotton sector which share similar ecological conditions with the north of Ghana. As the Ghana Shared Growth and Development Agenda has put it:

> (….) revival of the cotton industry to create jobs and enhance the economy of the three northern regions. Consideration will be given to the possibility of using part of the oil revenue to develop oil palm in the south, bask fiber in the transitional zone, and cotton and shea nuts in the north (NDPC, 2010, pp. 39).

Salifu (1999) observes that the potential area for Ghana's cotton production is about 500,000 hectares of which more than 80% lies in the Northern part of Ghana and is capable of producing 200,000 metric tons of lint cotton with market value of about US$200 million. There is thus an indication that, a bourgeoning cotton industry can go a long way to enhance the livelihoods of cotton farmers and create a trickle-down effect of an overall economic development of the North in ways such as those experienced by the south of Ghana through successful cocoa production. To discover the opportunities inherent in the cotton sub sector in the study areas and their region, there is a need for exploring into revolutionary policies and strategies that can draw on harnessing synergies at both national and local level to

facilitate and guide the process of reviving the cotton industry. This in the view of this study find support in LED approaches which are also been explored further in the study.

1.2 Problem Statement

Despite its high potential in reducing poverty and improving livelihoods, cotton production remains very low in Ghana. Key actors in the cotton sector over the years have faced serious difficulties in a bid to support the development of the sector. A preliminary interaction with cotton farmers revealed that farmers were worried about the challenges facing the textile manufacturing companies indicating that the country has the potential to produce cotton to feed the industry yet output levels are low. It has called on governments to expedite on planned actions to support cotton farmers to increase yield to feed the textile industries. Several cotton sector reforms and policy changes by governments over the years have done little good if any, in the attempt to resuscitate the ailing sector. Table 1 presents major reforms undertaken in order to promote the Ghana cotton sector since 1968.

Table 1: Cotton Sector Reforms in Ghana (1968-2011)

Date	Reform
1968	Cotton Development Authority was established
1985	CDA was transformed into Ghana Cotton Company Ltd (GCCL) and the sector was deregulated
1986	GCCL started full operations on April 1, with GOG retaining 30% shares. Other shareholders were textile companies, Input suppliers, and ADB. PDL and Nulux Plantations joined in the competitive race. Free input supply to farmers maintained but compensated by lower seed cotton prices
1989	Entry of several Companies into the industry: Juni Agro, Agrostar, Upper West Cotton Promotion Ltd, Intercontinental Farms, Bafcot.
1995	GoG sells 30% of its shareholding. Free inputs supply policy reformed into input credit policy to farmers. Price mechanism in place. Diversion of inputs becoming
1996/1997	Twelve Cotton Companies involved in cotton production
1997/1998	CDP1 under AFD launched. Evolution of Cotton growers' Association
1999/2000	Unprecedented malpractices (poaching, adulteration, etc.)
2000/2002	Zoning policy in place
	ADB stops financing private companies because of accumulated debts
2003/2004	Abortive takeover of GCCL by Ghana Amer Farms Ltd
2004/2005	ADB takes control of GCCL through debt-equity swap

Table 1 continued

2004	GCCL, main actor and smaller companies no more active
2006	Setup of a "Standing committee"
2010	Funding for seed cotton payments sourced from EDIF by MOTI in collaboration with MOFA. Role of NCFA significant
2010/11	Cotton Sector Revival Policy Launched

Source: *MoFA and MoTI, Cotton sector report, (2011).*

Given the many policy reforms that have characterized the cotton sector since the late 1960s, one would have expected that there should have been some stability in cotton production. However the reforms seem not to have made any significant positive change in production levels till today (Scholtes et al. 2011). The poor sector performance in the case of Ghana is not significantly different from the entire Sub-Saharan Africa however, Ghana cannot compare production level to any of the neighbours in spite of the numerous cotton sector reforms. See figure 1.

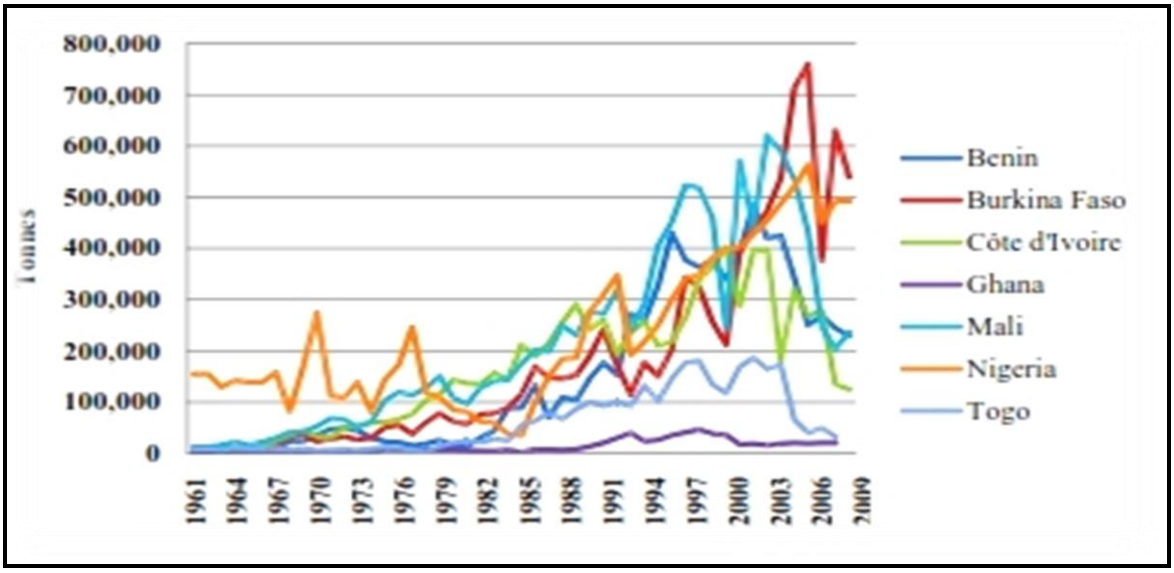


Figure 1 – History of cotton production in Ghana and surrounding countries. Source: FAOSTAT (2010)

As Delpeuch and Leblois (2010) have put it, calls for liberalizing/reforming the cash crop sectors in sub-Saharan Africa have been voiced for decades yet the impact of reforms remains elusive in empirical studies. What is not been done right in the entire cotton subsector in the country remain a key question to be explored since most of the ecological

conditions in the country particularly those of the savannah regions of Northern Ghana are more suited for the production of cotton. The cotton subsector holds a greater potential capable of contributing greatly to governments of Ghana's poverty reduction efforts of over the years (Badiane et al., 2002; Moseley, 2008) due to widespread smallholder involvement. As Philippe et. al. (2011) notes, the revival of the cotton industry is key to the reduction of poverty in the poorer, northern regions of the country. Opinion leaders of the study communities have appealed to farmers to take cotton production seriously since in their view, cotton production has the potential of improving farmers' livelihoods (Ghana Web, April, 2012).

The Sissala West and East districts hold a greater potential and the competitive edge in the production of cotton in the Upper West Region. The districts have over the years engaged in cotton production often with irregular and declining production levels similar to the national figures. Consequently, they are unable to provide cotton for the ginnery situated in the Sissala East district as was planned. The poverty profile of the study communities and the Upper West Region in general makes it more significant to question why there seem to be less commitment in tapping into the wide array of prospects associated with cotton production value chains; which the region and the study communities have an advantage in producing.

Philippe et. al, (2011); MoA and MoTI final report, (2011) notes that some general causes of the dwindling cotton production levels in the country include; unfavourable terms and conditions of the cotton producing companies, inadequate credit to cotton farmers, unfavourable government zoning policies, poor coordination and regulatory framework for the cotton sector, infrastructural deficits among others. Preliminary discussions also showed that, cotton farmers in the Sissala East and West Districts of the Upper West Region have threatened to register their displeasure in forms of demonstrations if the government does not act on what they referred to as "the uncertain state of cotton production in the region". They intimated that members of the Cotton Farmers Association in the three regions of the north were dying of hunger and poverty and that the prevailing circumstance could negate Ghana's cotton production if government fails to support them.

The Concerns expressed by the cotton farmers and their leadership in the view of this research sends signals to suggests that, government has been paying lip service in the attempt to revive the cotton sector whiles in the actual sense no concrete implementation of the policies so designed over the years have been diligently pursued. It is in the light above that this research attempted an assessment of the contribution of cotton production towards sustainable Local Economic Development in North-Western Ghana. The essence of this assessment was to identify and examine how harnessing synergy among government level stakeholders and local actors can or have influenced cotton sector policy reforms and initiatives in the study areas.

1.3 Research Questions

The main research question for this study was: What is the contribution of Cotton Production to Local Economic Development in North-West Ghana?

The Specific questions are:

1) What is the role of the cotton industry in the promotion of economic development of Sissala East and West Districts?
2) What are government's policy options that could stimulate LED in the Sissala East and West Districts?
3) What are the effects of cotton production on the health of the cotton farmers in the Sissala East and West Districts?
4) What are cotton farmers' lived experiences of the effects of cotton production on soil quality and food crop production?

1.4 Research Objectives

The main objective of this study is to Investigate and analyse the contribution of cotton Production to Local Economic Development in North-West Ghana.

The study seeks to achieve the following specific objectives**:**

1) Analyse the role of cotton production in the promotion of economic development of Sissala East and West Districts;
2) Explore government's policy options that could stimulate LED in the Sissala East and West Districts;

3) Examine the effects of cotton production on the health of the cotton farmers in the Sissala East and West Districts;

4) Assess cotton farmers' lived experiences of the effects of cotton production on soil quality and food crop production in the study communities.

1.5 Propositions of the Study

As noted in the Concise Oxford Dictionary (1999), a proposition is a statement expressing a judgement or opinion. Put differently, a proposition is a declarative sentence about a problem or subject that is either true or false. In this study, propositions were defined as assertions made about some variables of cotton production in the Sissala East and West districts based on which rigorous empirical observations were obtained to inform appropriate policy recommendations. The essence of these propositions were to provide suggestions on the basis for which the findings of this study were to be analysed and appraised. The following propositions were made in this study;

- Cotton production has a potential to engender local economic development in the study districts.
- Cotton production has a negative effect on the health of cotton farmers in the study districts.
- Cotton production has an effect on soil quality which is capable of affecting food crop production in the study communities.

1.6 Delimitation/Scope of the Study

This research project was limited to two cotton producing districts; Sissala East and Sissala West Districts in the Upper West Region (UW/R) of Ghana. The study explored the extent of synergy between and within local level stakeholders, government institutions and private sector among others in line with LED approaches in the development of the cotton sector. The activities of District Agricultural Development Units (DADUs) in the two districts; cotton buying and processing companies; Cotton farmers Associations and out-growers; financial Institution in the cotton production value chain, among others will fell within the boundaries of this study. Some best practices in terms of LED strategies and cotton production were identified to propel an apt assessment of the concepts.The variables of interest in this study included but not limited to:

a) The cotton sector revitalization programme of the government in terms of its overall progress;
b) Cotton farmers' perspective on government zoning policies; its effects on output and the forms of production arrangement in place;
c) The purported negative effects of the cotton production on soil quality, food crop production and health of cotton farmers;
d) Cotton pricing over the years, access to credit and extension services;
e) Land access and tenure arrangements for cotton production;

Discussions and analysis in this study drew on cotton sector policies and reforms from 1968 to 2010/2011 however, some efforts at influencing the sector growth beyond this time frame found relevant to this study were considered as and when they were obtained. This research study was an academic exercise which was expected to be concluded by June 2015.

1.7 Justification of the Study

The Government of Ghana (GoG) cognizance of the potentials of the cotton sector in improving livelihoods has attempted to regulate the cotton sector through several sector reform policies over the years. Not much gain however has been seen of the cotton sector revitalization strategies and reforms of GoG. The sector for instance in the 2011/2012 farming season, employed about 28,297 farmers and produced 13,790mt of seed cotton and 5,383mt of lint (MoFEP, 2013). This is an indication that, more employment and income generating opportunities could be created in an efficient cotton sector. The Head of business at Olam Ghana notes that, about 8,000 farmers were engaged in the cotton production chain in the 2011 farming season. He also noted that Olam invested $10 million in cotton production in 2011 and intended to increase investments to $35 million for 2012 season. According to him Olam planned to increase acreage to 100,000 hectares within the next four years. The statement has also indicated that the company produced 8000 tonnes of cotton for the 2011 season. In the light of the above, this study is very relevant for the following reasons;

Firstly, it has contributed to existing knowledge on cotton production in Ghana, particularly in the wake of government's efforts at revitalizing the sector for sustainable livelihoods. It

was important to embark on this study since lessons drew from the reform experiences in the cotton sector over the years served to provide useful guidance to policy makers, other local stakeholders, and interested donor agencies to ensure the revival of the cotton subsector.

This study was also deemed to be relevant to cotton producing companies since it sought to highlight some problems militating against the successes of the sector. In terms of sustainable environmental protection and soil management, recommendations that were proffered on the basis of the findings on the lived experiences of cotton farmers regarding soil fertility and cotton production serve to guide farmers and cotton companies on better and appropriate production practices necessary for the promotion of ecosystem regeneration and improved output levels.

Economic development can contribute to better health just as better health improvements can contribute to economic development though improved productivity and reduced debt burden from medical expenses. As such, an exploration of the health implications of cotton production for farmers in this study was deemed appropriate since it also served to highlight the disease causing practices associated with cotton production for appropriate health sector policy design for localities engaged in cotton production.

The employment generation capacity of the cotton sector through its value chains and its high investment prospects make it important to explore into all the complexities of the sector. Recommendations in this study was to be essential not only for the Sissala East and West Districts, but the nation as a whole in the design of employment policies and poverty reduction strategies. The cotton companies and other allied organizations can rely on this research document to help improve upon the level of cotton production in the districts for the sustenance of the operations of the gin and textiles factories in the districts and other parts of the country so as to boost wealth creation and local development goals.

It is worthwhile mentioning that, the appropriateness of this study in the Upper West Region and the selected districts was justified by the fact that, whiles the region is one of the three major producers of cotton in Ghana's North, the Sissala East and West districts

over the years, have been more associated to cotton production than the other districts in the region (RCC, 2001). Also majority of the people in these districts also engage in agricultural activities as a means of eking-out livelihood. Situated in Tumu, which is one of the study district, is one of the largest cotton ginneries in Ghana; an indication that, most communities within the district are likely to be engaged in the production of cotton to provide raw materials for the ginnery. On the basis of the aforementioned therefore, the region and the selected districts hold a high potential to support a discussion of the role cotton production in sustainable Local Economic Development; providing answers to the research questions of this study.

1.8 Limitation of the Study

This study was limited by the time frame within which data was to be collected, analysed and submitted for assessment alongside other on-campus academic requirements. However through a work plan and effective guidance of my supervisor, this limitation was addressed. There was also language barrier which the researcher surmounted through the engagement and orientation of a translators during data collection.

1.9 Organization of the Study

This study report is organized into five chapters. Chapter One provides a general background of LED and the statement of the problem. It outlines research questions and objectives, justification for doing the study, scope and limitations of the study. Chapter Two constitutes an exploration into literature related to the study. The focus was on the cotton sector development in Ghana and other countries in Africa, the effects of cotton production on the health of farmers and farmers; experiences regarding cotton production and soil quality, the mechanics of Local Economic Development approaches in development among others. Chapter Three is the methodology chapter which reflected the array of procedures utilized in carrying out the entire study. It encompassed the study design, types and sources of data, data collection tools and methods, sampling techniques and types. This chapter also reveals how data has been analyzed and presented. It highlights on ethical issues of research and concludes with a brief overview of the study communities. Chapter Four embodies the detailed analysis and presentation of the data so collected from the field. It contains summaries of findings in graphs, tables and figures interspersed some

explanations to identifiable trends and a discussions of key findings to identify their policy/planning implications. Chapter Five draws conclusions and makes recommendations in line with the problem statement and objectives while drawing important lessons from the literature based on the findings of the study.

CHAPTER TWO
COTTON PRODUCTION AND LOCAL ECONOMIC DEVELOPMENT

2.0 Introduction

This chapter reviewed relevant literature on cotton development with the intent to unearthing its prospects in enhancing Economic Development particularly at the local level. Existing literature on Local Economic Development (LED) as a concept was also reviewed in order to obtain a theoretical understanding of how localities could be developed using local resources, potentials and community interfacing. This review was to explore the linkages, concepts and anecdotes associated with cotton development. The review also juxtaposed cotton sector performance of Ghana to that of Burkina Faso and China to ascertain how differently the cotton sector was managed and administered in these countries to warrant their success stories in cotton production discourse.

2.1 Definition of Concepts and Terminology

The following key concepts associated with the subject matter of this study have been demystified for an apt appreciation of study audience. These entailed both expert and working definitions to actually contextualize the subject within an appropriate framework. These key concept are; Local, Development, Economic Development (ED) and the concept of Local Economic Development (LED).

2.1.1 Local

The term 'Local' as used in the concept Local Economic Development (LED) can be associated with a small geographic area such as city, town and villages within which decisions, laws and other control mechanisms established therein remain binding on internal organization of an area. According to the World Bank, (2003) the term "Local" connotes any area ranging from large cities to small towns including rural areas linked to the towns. It also refers to a geographic area composed of a group of government authorities that share a common economic base, are close enough together to allow residents to commute between them for employment and recreation and which have some established patterns of communication, economic exchange and social co-operation potential for collective action (ILO, 2001; see also Korkor, 2001).

In Ghana's development trajectory, a local area can be contextualized within a government administrative area where control and other development management initiatives are supposed to originate in line with grassroots and available indigenous resources. Within the ambits of Ghana's democratic dispensation, the administration of these growth poles recognizing the important roles of indigenous institutions and their value systems is what is often termed in this study as the Local Government System of decentralized development.

In this study, the term "Local" has been used to represent a territorial area, sub regional administrative units (Mitchneck, 1995) whose inhabitants, indigenous actors and institutions can take on the responsibility for generating wealth, with the view to ensuring that their economic ventures are made more competitive for the improvement of their livelihoods with or without any form of external intervention whiles making optimal use of their already existing capacities.

2.1.2 Development

Development as a concept has been variously defined and understood. It has been contextualized differently by different people to suit the diverse world views within which the concept is been used. In the view of Todaro and Smith (2009) development conceptualized in economic terms refers to the capacity of a national economy to generate and sustain annual increases in its Gross National Income (GNI) at rates of between 5% and 7 % or more for a long time. As an economic process, the World Bank, (2010) suggests that, development should be understood in terms of the levels of per capita incomes of residents within an economy. In the view of the World Bank whereas countries or areas with high per capita incomes are experiencing development, communities or countries associated with low per capita incomes are not experiencing development.

How will the buoyant per capita incomes of economies lead to optimizing the greatest good for the greatest number if distributional issues of the overall wealth are not considered? This viewpoint has remained a key critique of the World Bank's viewpoint of the meaning of development.

Evidence today suggests that, per capita incomes are unable to explain development satisfactorily since it is possible for high per capita incomes to coexist with very low Human Development and Physical Quality of Life indices (Todaro, 2009) within the same economy. What this means is that, achieving high per capita income is necessary but not sufficient to be regarded as representing the real meaning of development.

Until recent, the term development was often used synonymously as Economic Development (ED). This had meant that economies which were able to generate and sustain some progress in their economic indicators (GNP, GNP Per capita among others) were noted to be experiencing development. In his study on the theories and practices of development, Willis (2011) suggests that the use of wealth to represent development in its earlier notion was on the assumption that, associated with greater wealth was improvements in other aspects of development such as improved health, education, quality of life, self-esteem and overall stimulation of development among others. The viewpoint of the association of wealth and development over the years has been confronted with startling evidence as having failed to effect the purported structural changes since issues such as inequality in the distribution of wealth, poor health; poor education among others still coexists with economic development in most economies.

The coexistence of two conditions; economic development and worsening human development over the years has brought about a supposition that, development should be explored and understood through the analysis of both economic and non-economic indicators (UNDP, 2009; Seers, 1969). In the view of Seers (1969), development should be recognized within what he termed as core values of development (sustenance, self-esteem and freedom from servitude) the attainment of which will lead to a holistic consideration of the human welfare. Attempts to redress the issue of poverty and underdevelopment in wealth which characterized the early conceptions of development have remained a key concern to the United Nations, national economies and other human development organizations.

In Ghana for instance, efforts to align the development initiatives to poverty reduction and improved human welfare has been conspicuous in the national policy frameworks of the

country (GPRS I& II, GSGDA I & II). The indications are that, since poverty is more endemic in the grassroots and local levels it can be suggested that, the focus to reduce it imply a shift in development focus from the attainment of only economic goals to the attainment of welfare indicators.

World leaders at the Cocoyoc conference in Mexico expressed similar concern about the failure of the economic perspective of development to trickle down to the masses (UNCTAD/UNEP, 1974). They clamored for the dethronement of the economic conception of development whiles suggesting the adoption of a new conception of development which stressed more on human life, the natural environment and the attainment of basic life sustaining needs rather than economic indicators. In the view of the United Nations as noted in its programme reports over the last decade, development should be understood to incorporate non-economic indicators such as long and healthy life; education and Knowledge and a decent standard of living measured in terms of Human Development Indices (HDIs) (UNDP, 2009).

In current discourses on development, the quest to recognize sustainable development has come to the fore. Sustainable development defined; connotes the continuous economic and social progress that respects the limits of the earth's ecosystems and meets the aspirations of everyone for a better quality of life, now and for future generations to come (DEFRA, 2004 as in Nick et. al 2008). Emphasized within the framework of sustainable development is the need for a better coordination of the social, economic and environmental concerns in the man-environment reciprocal interaction. It also entails the need to appreciate environmental preservation in the pursuits of economic development goals in such ways that could bring about the attainments of the needs of and aspirations of the current generation without compromising future generations' ability to meet their needs (Brundtland Commission report, 1987).

Since the concern of this thesis is local economic development, it is essential to delve into the nature of economic development in the administration of development within a local area. In the view of Todaro (2009) Economic development moves beyond the efficient allocation of scarce productive resources sustained over time to connotes qualitative

changes in social, political and institutional mechanisms necessary to bring about improvements of the levels of living of people in a given economy. In other words, it is the growth of the country's wealth that is able to lead to the improvement of the well-being of the inhabitants. Development is thus defined in this study as the process that aims at promoting an improved living and working conditions of the communities through the creation of new job opportunities, the retention of existing jobs and the generation of incomes.

2.1.3 Local Economic Development (LED) - Meaning and Approaches

Increasingly, the concept 'Local Economic Development (LED)' has been used to describe initiatives of Governments, NGOs, and International Development Partners among others which are geared towards the promotion of local level ownership of development interventions. It is regarded as an exciting concept that offers area developers an opportunity to work with partners to improve the quality of life and the competitiveness of their communities from small and intermediate rural centres to large cities (Baha, et. al. n.d.). LED can be defined as a process by which Public, Business and Nongovernmental sector collectively work to create better conditions for economic growth and employment generation for localities (Bradshaw and Blakely, 1999). It refers to those development strategies which offers Local Government Authorities, Private Sector Partners, Non-profit making Institutions and Local Communities the opportunity to work together to stimulate and improve the local economy focusing on enhancing competitiveness, increasing sustainable growth and ensuring inclusive growth with the aim of improving the quality of life of everyone (World Bank, 2003; UN-Habitat, 2003; Blakely, 1988; ILO, 2001).

LED can be aptly understood within the context of decentralization; a term so pronounced in governance in the developing countries (Rodriguez-Pose and Tijmstra, 2009) and which has the mandate of taking governance and the pursuit of development goal closer to the presumed stakeholders to foster local participation in decision making. LED approaches attempt to engage, harness and draw on the energies of local communities and stakeholders to take appropriate actions for the realization of the potentials of their indigenous assets and opportunities to enhance Community Ownership and Management (COM) of

development. Conyers and Hills (1984) recognize that, it is possible for a local area to develop either through its own efforts or as a result of some sort of outside influence. The indication in this viewpoint is that, at any point in time when administering development, it is important to recognize that working in synergy with all stakeholders has the tendency to identify and address capacity limitations; local resource constraints among others for sustainable development administration (see European Union, 2014).

Cunningham and Meyer-Stamer, (2005) argue that, promoting Local Economic Development (LED) has become a growth sector in the International Technical Assistance Industry in both the developed and developing countries. Their thesis further recognizes LED as a tool for promoting Economic Development, addressing unemployment and poverty with emphasis on the importance of creating a stable macro-economic framework and functioning markets. Implicit in the viewpoint of LED expressed above is the opinion that, a stimulation of the local economy is sufficient to unleash entrepreneurial enthusiasm to the extent that will be needed to create a satisfactory level of employment and encourage local initiatives since exogenous development authorities neither have all the information nor the skills and funds to promote active economic development initiatives. For instance, European Union, (2014) notes that in applying LED strategies, local communities are often encouraged to develop integrated bottom-up approaches to respond to territorial and local challenges, build community capacity to stimulate innovation, entrepreneurship, provide capacity for discovering untapped potential from within communities and territories; promote community ownership through increased participation within communities and build a sense of involvement and ownership that can increase the effectiveness of policies and multi-level control by providing a route for local communities to fully take part in shaping the implementation of planned activities.

Todaro and Smith, (2009, p.570); UNDP, (2012) however argue that, there are limits to participatory approaches to development which is contrary to the view of the European Union and other promoters of the LED's ability to engender development. Todaro and Smith (2009); UNDP (2012), in furtherance notes that, allowing for effective participation in local development is often constrained by policy weaknesses, time, adequate capacity

and resources. As a result, there is the possibility that, unhealthy and unskilled people are not able to participate effectively in implementation as expected let alone have a full voice in arriving at decisions that affect their lives. Notwithstanding the view of Todaro and Smith (2009) as espoused above, this thesis ague that, genuine participation mechanisms that seek to synergize the energies of National Government, International Organizations, Local Level Power Brokers and Community members might take time to be organized however, the need to enhance community ownership and management of development initiatives require some level of participatory planning at some point in time in administering development.

By far, the views expressed in this study represent the contemporary context of the Local economic development approach. As an alternative to the erstwhile traditional top-down conception of LED, the recent approach conceives LED as a development strategy that encourages harnessing synergies among multiple actors, such as central government, local governments, the private sector and community level actors among others with the intent to facilitating joint planning and implementation of activities in ways that could stimulate the local economy.

Characteristic of development discourses after the Second World War has been the view that government's lead role in the pursuits of development was a prerequisite for redressing some of the failures of the market system. On the other hand, the efficiency of the invisible hand of the market remained sway in development administration on the belief in the 1980s that a lot of inefficiencies were associated with governments' lead role in development (Rodriguez-Pose and Tijmstra, 2009). It is worthwhile noting that whether nationally designed or externally introduced, LED programmes until recent has often failed to recognize the indispensable role of the local economy, their institutions and local conditions. For instance the UNDP (2012) notes that the conventional sectoral systems that were been used to implement the global Millennium Development Goals (MDGs); where Sector institutions and ministries were to be strengthened to lead implementation was incapable of translating the global consensus into local action and results. The UNDP further notes that, a long-term concerted process that required elaboration of issues on local

ownership, local accountability, viability of local institutions, and sustainability of gains are lessons that should be incorporated in the post 2015 development agenda.

The recognition of the indispensability of endogenous local conditions in recent times has brought about what is known today as the contemporary context of LED which hinges on participatory, all-inclusive bottom-up development approaches.

The requirements of LED is that key stakeholders in a local government area must come together to reach consensus and take decisions that will make an economy to grow and create income opportunities for more people, especially the poor and marginalized (Boekel and Logtestijn, 2002). LED involves identifying and predominantly using local resources, ideas and skills to stimulate economic growth and development, with the aim of creating employment opportunities, reducing poverty, and redistributing resources and opportunities to the benefit of all local residents (Mensah et al, 2013, see also Stimson, Stough and Roberts, 2006). Local Economic Development strategies are expected to be applied in such a way that, they will promote local dialogue and enable people to become proactive in initiating development; help to local institutions better contribute to development; make economic activity dependent on the comparative advantages of a specific territory, generating development by firms and economic activities which are more capable to survive changes that could result in the global economic environment rather than top-down development of inefficient handouts imposed by national economic planners and policy makers (Iwala, 2014).

2.2 Local Economic Development in the Developed Economies

The commitment of local authorities to adopt and apply some form of local economic development approaches has been growing steadily the world over. In the United Kingdom for instance Townroe (1979); Geddes (2004) notes, LED approaches have been applied in order to address unemployment challenges which was caused by economic restructuring and decline in industrial activities and to support the reorganization of local government activities. In the United States of America, it has been argued that, the LED approach to development held sway in most part of the 1970s also as a reaction to a decline in economic growth, and a tool for stimulating development through directive planning initiatives (Dewar, 1998). Within the context of directive planning, governments had sought to direct

development interventions from the centre through targeted programs such as tax holidays, free zones enclave sites, loans, grants among others.

This thesis argues that, LED has been recognized for its ability to help in addressing major economic misalignments and shocks even in the advanced economies through stimulation of community-based enterprises, government provision of resources for local initiatives and extensive local level capacity building for community-based initiatives. Therefore since most developing African countries and Ghana in particular still strive to address issues of unemployment, debt levels, exchange rates, inflation, urban and rural poverty, spatial inequality among others, appropriate application of LED approaches should add an impetus to the long standing poverty reduction goals that have characterized most national and cotton sector policy frameworks and the global development goals over the last ten years.

2.3 Local Economic Development in Africa

In Africa, Rodríguez-Pose and Tijmstra (2005) notes that LED evolved as a result of the continuous problems of slow economic growth and widespread poverty, changes in national and international economic environment and the inability of central governments to intervene at the local level (Mensah et.al, 2013). Most African countries after regaining independence from their colonialism have remained vulnerable recipients of aid, grants, loans and development models designed originally for the reconstruction of Europe and other western countries after the devastation of World War II. The belief was that, since development was a process to an end, diligently following the growth paths of the now developed world could bring about development in transformational third world countries. However, Prebisch (1959) for instance argued that, the low levels of economic growth and development in developing countries most of which are found in Africa will not be improved merely by faithfully following the simplistic free trade viewpoint of the modernization theorists. Prebisch notes that this was because the global economic structure of developing countries was different from what existed in Europe. With little or no consideration to the structural and institutional differences, the human and physical capital, the cultural and local level conditions, wholesale importation of the western development models have thus not been able to make any positive turnaround in living conditions in

African countries (Rodney, 1981) hence the need for a development approach which is capable of integrating all stakeholders and related conditions to engender development rather than developing under development (Gunder, 1967).

2.4 Local Economic Development in Ghana

In Ghana, although LED approaches have not been consciously applied to generate growth (Mensah et. al., 2013) and reduce poverty in the early part of post-independence period, it has taken centre stage in recent discourses in deepening decentralization and is a feature of most international development agencies with a stake in Ghana's development such as GTZ, ILO.

Helmsing (2003) has noted that as decentralization is increasingly gaining grounds, local economic development is acquiring an even more significance. Recognizing the key role of local environments in development, governments of Ghana over the years have noted that deliberate, rigorous and conscious efforts should be put in place to address socio-economic factors that contribute to poverty within hitherto centralized planning. Through such institutions as the National Development Planning Commission (NDPC), the Ministries, Department and Agencies (MDA) and the Metropolitan, Municipal and District Assemblies (MMDAs), decision making functions and the pursuit of development goals are linked to the most local level possible.

Within the local government system in Ghana therefore, LED approaches has been operationalized through the relationships created between the NDPC, the Regional Coordinating Councils (RCCs), the District Assemblies (DAs) and other institutions who have a stake in ensuring sustainable local level development.

For instance, the mechanics of decentralized local planning requires that, the NDPC which is the apex of national planning in Ghana in accordance with Section 1(3, 4), 2 to 11 of the National Development Planning (System) Act 1994 (Act 480) issue guidelines to the MDAs and MMDAs from time to time to facilitate the preparation of local level plans (the preparation of which is supposed to be participatory) for coordination by the RCCs who are also expected to submit coordinated local level plans received from the MMDAs back to the NDPC to inform the broader national policy framework. By engaging in these

processes, local planning authorities and stakeholders are better able to direct programs and projects towards sustainable local level poverty reduction strategies drawing on the strengths inherent in synergy as professed in LED approaches. In line with this argument, Mensah et. al., (2013) notes that adopting such participatory procedures will make it imperative for the country to adopt locally or regionally driven development processes which places prominence on harnessing and exploiting local resources and building local capacity to stimulate economic development to reduce poverty.

The Ghana Shared Growth and Development Agenda I (2010-2013) therefore requires the mainstreaming of the concept of local economic development into planning at the district level to provide special incentives for the private sector to support local economic development in line with priority areas of the policy framework and to generate employment and social protection strategies. In the preparation of District Medium Term Development Plans (DMTDPs) district/ local government areas in their bid to promote local economic development are expected to consider introducing innovative programmes such as: facilitating the upgrading of technological and managerial capabilities of micro, small and medium enterprises, provision of business development services in the areas of marketing of products, technical and management training to stimulate skills development and upgrading especially for women and youth establishments as well as embarking on marketing strategies that will advertise the economic endowments of the DAs and create good image to attract investment. Local government authorities are thus expected to be more proactive (Oduro-Ofori, 2011) to rapidly address the LED needs of the local areas by adopting strategies that will ensure the development of all sectors of the local economies through enhanced Participation, Facilitation, Regulation and Adjustive principles (see Korkor and Kroes, 1996)

2.5 Approaches to Local Economic Development

The purpose of Local Economic Development (LED) is to explore the synergy of multiple players in local development, including Central Government, Local Governments, Private Sector Operators and Community groups to achieve economic growth and remain competitive through joint design and implementation of initiatives. Samir Bahaet. al. (n.d.) asserts that, local economic development (LED) is often adopted to support the economic

capacity of local areas to improve its economic future and the quality of life for all. As Tibaijuka (2005) notes, ensuring that development becomes inclusive and impact on the quality of life of all people is even more challenging to many local authorities and civil society organizations that often lack the capacity to meeting urgently the needs of all people. It is indicative here that, how to make economic growth a reality in communities and growth poles is not the only challenge to local authorities, the challenge also includes how to ensure that the growth so generated from the workings of the economic variables also caters for the needs of the poor and marginalized and considers the long-term utilization of the potentials of localities in the delivery of development policies (European Commission, 2014). As a development concept, LED thrives on initiatives that are not extremely inclined to either the workings of the free market or the planned state systems but draws on the strengths of each of the two systems to ensure community ownership of development initiatives with the belief that societal ills such as unemployment, poverty, job losses, environmental degradation among others are addressed by community-led integrated approaches.

There is no single approach to LED that will work effectively in every local area. This is because each local area has unique set of potentials, opportunities, challenges and constraints which could propel or mar local development. Baha et.al. (n.d.) supports this viewpoint noting in their study that, each society has a unique set of local conditions and advantages that either enhance or reduce the potential for local economic development and that these advantages determine the abilities to attract, create and maintain investment. The indication is that, LED approaches are more successful if they are designed for specific areas and must be designed as such. Given the high potential of districts in this study to reduce poverty and increase general living conditions through cotton production cognizance of the suitability of the ecological conditions for cotton cultivation, LED approaches should be explored and designed the application of which will maximize the prospects of cotton as is obtained in neighbouring Burkina Faso with similar conditions. Over the years however, a number of approaches to LED have been identified within which specific LED designs could be situated.

The International Labour Organization (ILO) has been recognised for its comprehensive approach to the promotion of Decent Work (DW) at the local level.

The ILO notes that LED is instrumental in the prevention of the marginalisation of poor territories in terms of benefit from an increasingly globalized world jobs through the stimulation of social and economic development at the local level. The ILO approach to LED requires that People or localities should get organized to overcome poverty through coordination and management efforts that promotes the organisation of people at the territorial level.

Specifically, the ILO LED approach is characterised by elements such as:
Fostering participatory processes and decision making through bottom up approaches; ensuring long-term ownership of the development processes by local actors; engendering public-private partnerships while supporting the legitimacy and sustainability of the development process; bringing local stakeholders together, helping to build trust, encouraging innovation, promoting the creation of social networks and contributing to conflict resolution with the main focus of actions on a defined territory. LED is a means to achieve the effective mobilization of local resources by encouraging investments with the highest rate of socio-economic return. The use of endogenous resources aids in maximising competitive advantages for the attraction of investments to the local territory. LED is thus a comprehensive approach that integrates many disciplines relevant to local development and enhances networks between local, national and international stakeholders, facilitates the integration of local priorities and development strategies in national policies and legislation.

Baha et.al, (n.d.) has noted that, LED has passed through three main stages/ approaches since the 1960s which they referred to as the "three waves" of LED. Similarly, Bradshaw and Blakely (1999) in their study captioned "What are third-Wave State Economic Development Efforts; from Incentives to Industrial Policy" also recognize three approaches characterizing LED in development policy and administration. Some literature also classify local economic development approaches or strategies into traditional and contemporary local economic development approaches (Patterson, 2008, Rücker and Trah, 2007)

however, these different nomenclature point to the emergence of LED in the wave of incessant globalization of the world today.

In the view of Boothroyd and Davis (1993), LED can be conceptualized within Community Economic Development principles expressed within three broad approaches depending on which of the terminology emphasis is placed at any point in time (c**E**d, ce**D, C**ed). They categorized each of the three emphasized terminologies under; Growth Promotion Approach, Structural Change Approach and Localization approaches.

2.5.1 Growth Promotion Approach

Under this approach, Boothroyd and Davis (1993) notes that, development involved community boosterism to attract government attention and major private sector investors. The growth approach also involves a coordinated strategic planning by a wide range of community institutions using financial, legal and promotional tools such as tax relief and holidays, developing industrial areas among others. The first wave of Samir Baha et.al. (n.d.) cognition of growth promoting LED approach remains consistent with the postulates of Boothroyd and Davis (1993). For instance, Baha et.al. suggest that, LED programs under the growth promoting approach often require aggressive crowding-in of firms and economic activities with the overall focus on the attraction of movable manufacturing investment from outside a local territorial area especially the attraction of Foreign Direct Investment, new branch of plants with financial incentives and making hard infrastructure investment.

Bradshaw and Blakely (1999) also conceptualized the first wave growth promoting LED approach as an Industrial attraction endeavor which was dominated by programs designed specifically to attract firms from old industrial areas to growing regions using tools such as subsidized loans or direct payments to firms for relocation expenses, tax reductions, subsidies applied to the cost of plant facilities or utilities among others. Under the promotional scheme, stakeholders are encouraged to pursue the ideals of progress, growth or acceptance of priority initiatives at the local level by buying into development programmes scheduled for stimulating growth. Cities invest in expensive industrial employment campaigns to attract Foreign Direct Investment. The indication is that, at the

community level, the growth approach concerns primarily with monetary transactions with the primary goal of creating jobs and incomes through increases in monetary inflows into a locality. Boothroyd and Davis (1991) however observes that the growth promotion approach to LED often set the stage for investors and business entities who demand grants, incentives, and tax advantages to set up plants that employ workers at low wages that is, investors move into a local area to enjoy the associated rebates and then move on to other disadvantaged areas. A note of caution to the policy of going all-out to solicit for investment from outside through enticements associated with this approach is that, proper checks and balances should accompany such policies to prevent investors from milking disadvantaged dry.

2.5.2 Structural Change Approach

This approach as has been noted by Boothroyd and Davis (1993) indicates that, there was the need to redefine development by replacing the emphasis of development in terms of growth whiles upholding short term and long term stability through structural change and local control. Here, planners work to further enhance the development functioning of locally controlled institutions and provide information on possibilities for diversifying markets, products and ownership. Inherent in this approach is the fact that, both monetary and non-monetary transactions are the preoccupations within the economy intending to achieve stability and sustainability by increasing local control through structural changes. Again, this viewpoint of Boothroyd and Davis under the Structural Change Approach of LED is in consonance with the 'second wave' of LED programs which have been implemented between the early 1980s and the mid-1990s (Samir Baha et.al. n.d.). In the view of Samir Baha et.al. the second wave of LED focuses more on the retention and growing of existing local and small businesses and help them to be more competitive against larger firms often targeted to specific sectors or from certain areas. Also consistent with Structural Change perspective of LED is the view of Bradshaw and Blakely (1999). In their analysis, by the early 1980s, states began operating second-wave incentives that shifted focus from attracting out-of-state firms to retaining and expanding existing firms through strategies, such as creating new businesses, increasing investment capital, developing business incubators, providing technical assistance to help local businesses

grow or expand (Ross and Friedman, 1990; see also Clarke and Gaile, 1992) as well as strategies that were typified strong investment and entrepreneurial approaches (the use of revolving loan funds, below-market loans, and enterprise zones or tax increment financing (see Clarke and Gaile, 1992). One significant structural change issue considered worthwhile under this strategy is that, local communities are able to gain control and access rights over their natural resources which are often usurped by commercial profit – seeking interests of investors in the growth promoting approach. This study suggests therefore that, the structural change approach has the tendency to reduce reliance on external investment and decision-making whiles increasing local-ownership by through local control over resource management and territorial administration.

2.5.3 Localization Approach

Under this approach Boothroyd and Davis (1993) has argued that development of a territorial area can be achieved through non-coercive stimulations of society such that the production and distribution of goods and services are organized on a participatory basis through partnerships with local groups. Under this approach, production and distribution draws on both market and non-market variables and focuses on caring and sharing of gains generated through integrated socio-economic development. Under the Localization approach to LED Samir Baha et.al. (n.d.) again argue that, Since the late 1990s, the focus of LED programs has shifted from individual direct firm financial transfers to making the entire business environment more conducive and beneficial to business which has been regarded as the emerging "Third Wave" of LED. The localization proponents of LED suggest that, rather than having government directly providing economic development services and enticement support to small and existing businesses as indicated in the earlier approaches, government should encourage private sector providers operating in a competitive market to provide such economic development services.

The indication is that, government should still be involved with economic development, by providing some financial support and guidance to these private economic development providers. Here, LED focuses more on soft infrastructure investments, Public/Private partnerships, networking and the leveraging of private sector investments for the public good and investment attraction to add to the competitive advantages of local areas. In

furtherance of the Localization approach to LED, Bradshaw and Blakely (1999) also recognizes the need for government indicative planning role in the development of a local area through networking and partnership. This viewpoint has been amply analyzed to represent the third-wave LED strategies which shift focus on local development by creating a framework for economic growth through public-private partnerships, networks that leverage capital and human resources to increase the global competitiveness of a group of strategically linked firms (Bradshaw and Blakely, 1999).

LED in recent times is thus based on the third wave/ localization of development initiatives, driven by local stakeholders and involves the identification and use of local resources, ideas and skills in an integrated way to stimulate economic growth and development in the localities (ASALGP, 2005). In Ghana, this contemporary view of local economic development approach has prospects or potentials in galvanising the efforts of development actors and local resources into propelling economic development at the district level if the capacity needs of the local actors are addressed. It should be noted that even though LED has moved through several phases, elements of each wave are still relevant in the quest to achieve a holistic development of a local area.

2.6 Theoretical Overview of the Study

In recent development discourses, the emphasis on local economic development theory has shifted from placing prominence on exogenous top-down approaches to an increasing emphasis on endogenous grassroots and bottom-up approaches (Stimson and Stough, 2006). This implies that, development theories over the years (classical and neo-classical thinking) have visualized the development of economies as a process of following strait-jacket rational and logical procedures in order to address development challenges in transformational economies. For instance Rostow (1960) notes that there was a path to development through which economies in the pursuit of development should go through. Rostow argues that less developed economies were able to transit into higher stages of development by proceeding non-arbitrarily through the sequence of development of modern societies. However, Stimson and Stough, (2006) postulates that in the pursuit of development goals, it is appropriate to recognize the significant roles of both exogenous

and endogenous factors such as entrepreneurship, innovation, adoption of new technologies, leadership, institutional capacity and capability and value systems since these to a large extent dictate how development should be administered within a local area.

This has brought about the increasing need for a development paradigm which is more participatory and seeks to integrate both internal and external stakeholders for development.

Theories of economic development and the development of a local territorial area have thus undergone a series of evolutionary changes since World War II (Stimson and Stough, 2008) that is; from Keynesian comprehensive master planning models to economic rationalism associated with the attainment of set goals and objectives models. They included the shift in focus of models from comparative advantage to competitive advantage and to the notion of collaborative advantage concerned with the achievement of sustainable development through local self-help in the pursuit of endogenous growth (Stimson et. al., 2006). On his part Kornai as in Blitzer et. al. (1975) asserts that, neither the extreme market nor the planning models can work in isolation to control the modern complex economy to accelerate development. He submits that, the development of an economy requires the contribution of several subsystems to get the growth job done. The view of Kornai is not at variance with the postulates of LED approaches since the conclusion that, economic growth and development depends on the convergence of economic systems and actors implies that, most stakeholder with a stake in identified developmental challenges will be brought on board to have it addressed cognizant of both exogenous and endogenous correlates of development and the differing viewpoints.

2.6.1 Participatory Economic Development Theories

The modalities of Local Economic Development as have been noted from preceding discussions fits more with the postulates of the contemporary economic planning theories and models which recognizes participatory approaches as having a useful role in articulating local needs and aspirations and identifying development interventions. The clamor for new development theories prior to the 1970 have often been attributed to the failure of rational top-down and centralized approaches to trickle down to help poor people

and reduce inequality (Willis, 2011). Participatory Planning theories have been upheld in recent development discussions for the fact that, it requires the involvement of the local people in the actual agenda setting of development policies from the onset rather than outside agencies deciding on priorities to be addressed and then working with the local people to achieve them (Willis, 2011). Some Participatory theories inclined to LED and are deemed relevant to this current study are been reviewed.

2.6.2 The Basic Needs Model (BNM)

The expressions 'basic needs', 'basic needs approach to development' and basic-needs-oriented policies have for some time now increasingly being used in discusions about development (ODI, 1978). The Basic Needs approach to engendering development has been associated with multilateral organizations such as the World Bank (WB) and the International Labour Organization (ILO). In specific terms, the Basic Needs Model of development is attributed to the ILO in its World Employment Conference (WEC) (1976) declarations. In the basic working paper for the conference on Employment, Growth and Basic Needs, participants declared that, strategies and national development plans and policies should strive to include explicitly as a priority the objective of employment promotion and satisfaction of basic needs of citizens. This view point tends to suggests that, the pursuit of development goals should always be focused on the poorest people in society rather than at a macro-level which often seek to indirectly help the poor through trickle-down mechanisms (see Willis, 2011).

As noted in the ILO's Programme of Action, basic needs comprise two components. The first encapsulates a certain minimum requirements of a family for private consumption such as adequate food, shelter and clothing, as well as certain household equipment and furniture whilst the second include essential services provided by and for the community at large such as safe drinking water, sanitation, public transport, and health, education, and cultural facilities. Basic-needs-oriented policies thus imply the participation of the people in making the decisions which affect them through organization of their own chosen alternatives. This is not at variance with the ideals of LED which also require that, development initiatives for local development should take into consideration the local comparative advantages to engender sustainable local level growth and development (see

Geddes, 2004; see also Blakeley, 1994). The basic need approach concerns with the details of supply and demand and with restructuring the production processes in favour of the poorest with the intent of providing them with income-earning opportunities and with the goods and services they need. The chosen study communities just as most parts of the upper West region and Ghana in general is besieged with development challenges such as endemic poverty, unemployment and unfavourable weather conditions. Within the basic need analysis, it is appropriate that, initiatives to address identified challenges should at the instance of the government recognize local stakeholders not just as recipients of interventions but as knowledgeable people whose inclusion in the formulation and implementation of interventions can bring about successful outcomes. Despite the widespread support for the need to include presumed beneficiaries of interventions in actual agenda setting as espoused by the basic need approach of development, Friedmann, (1992) has noted that, its application was technocratic and focused on production hence was losing its appeal.

2.6.3 The Participatory Planning for Sustainable Community Development (PPSCD) Model

This study argues that, Local Economic Development also fits into the Participatory Planning for Sustainable Community Development Model which has been associated with Virginia Seitz (2001) and the Community Partnership Center at the University of Tennessee. Their model postulates that within communities, there are complexities of values, perceptions, and the relative power of the various stakeholder groups who are affected by these decisions differently and also have different needs and aspirations. The model therefore supports the view that, removing barriers to local level participation taking cognizance of stakeholder and other contextual differences works together towards a joint generation of interventions at the very onset through to monitoring and evaluation to ensure sustainable development.

Adherents of the Participatory Planning for Sustainable Community Development Model submits that, in the pursuit of development goals, a designed model should be able to moderate the differences among community stakeholders in access to and control of resources for effective consensus building. The implications of the thesis of the PPSCD

model is that, in order to ensure efficiency in the use of scarce resources of society, it is imperative for communities to dialogue through various stakeholder engagements and consultations to provoke understanding of important linkages and trade-offs that are likely to be created between local level living conditions and the potential for various stakeholders to benefit or get affected from alternatives selected.

These assumptions associated with the model points to the fact that, the complex local environment has what it takes to support or repel economic development initiatives and should thus be stimulated to influence initiatives through effective participatory practices that can influence the patterns and way of life in a local community (Laura and Reese, 2002) from start to finish in economic development alternatives. This view is not significantly different from what LED approaches prophesizes (see Mensah et. al., 2013; Agranoff and McGuire, 1998). Local Economic Development approaches also require the inclusion of different stakeholders in planning for development so that their opinions, apprehensions and issues can be incorporated in the planning process. The incorporation of all who matter in the project is important because it is through the process of incorporation that networks, partnerships and information sharing occur to make better and more practical strategies for development.

2.6.5 Regional Economic Development Planning Model

Even though Stimson et. al. (2006) asserts that there is no universal model or framework that can vouch success for regional/local economic development; they provide a representation of current best practice approach to economic development. It suggests that the intent of regional/local economic development strategy may include an establishment of a platform for change to guide the development of a local area, expedite its effectiveness in a global setting in the pursuit of a sustainable future; and mobilize key actors or facilitators and agents of change, through partnership approaches incorporating strategic coalitions between business, markets, government and community level groups.

Stimson, et. al. (2006) has noted that, because of the changing role of regional economies within nations, the impacts of globalization and given the context of contemporary

concerns about how to achieve sustainable development, a set of new considerations are more and more being taken into account in formulating and implementing economic development strategies for regions.

This new approach to the process of formulating an economic development planning strategy framework for a local area or region is firmly rooted in the principles of promoting conditions that enhance endogenous growth and development (Stimson, et. al. 2006).

Promoting conditions for an enhanced endogenous growth and development finds support in Boothroyd (1993) Growth Promotion Approach to enhancing sustainable local level development through condition that attracts investments to an area. However, it can be adduced that the promotion of growth as required by the new endogenous principles entail the use of participatory approaches which open doors to stakeholders at the lowest level possible to make their inputs in planning for development.

All agents (Business, Market, Government, Community level groups and Technology) of a development concern such as the one prompting this study (the dwindling production level of cotton in the Sissala districts) are expected to function together to fashion out a common local strategy for sustainable intervention implementation through both local government effort to attract investors and encouraging local actors within the defined sub-national territories to get together to work in concert in addressing their needs. The operationalization of how working together could translate into the attainment of common programmes and projects for a local area has been represented in figure 2. The figure tries to demonstrate that, all through the fourteen phases, participation and local level strategy formulation is the fulcrum if designed interventions will be able to meet their target.

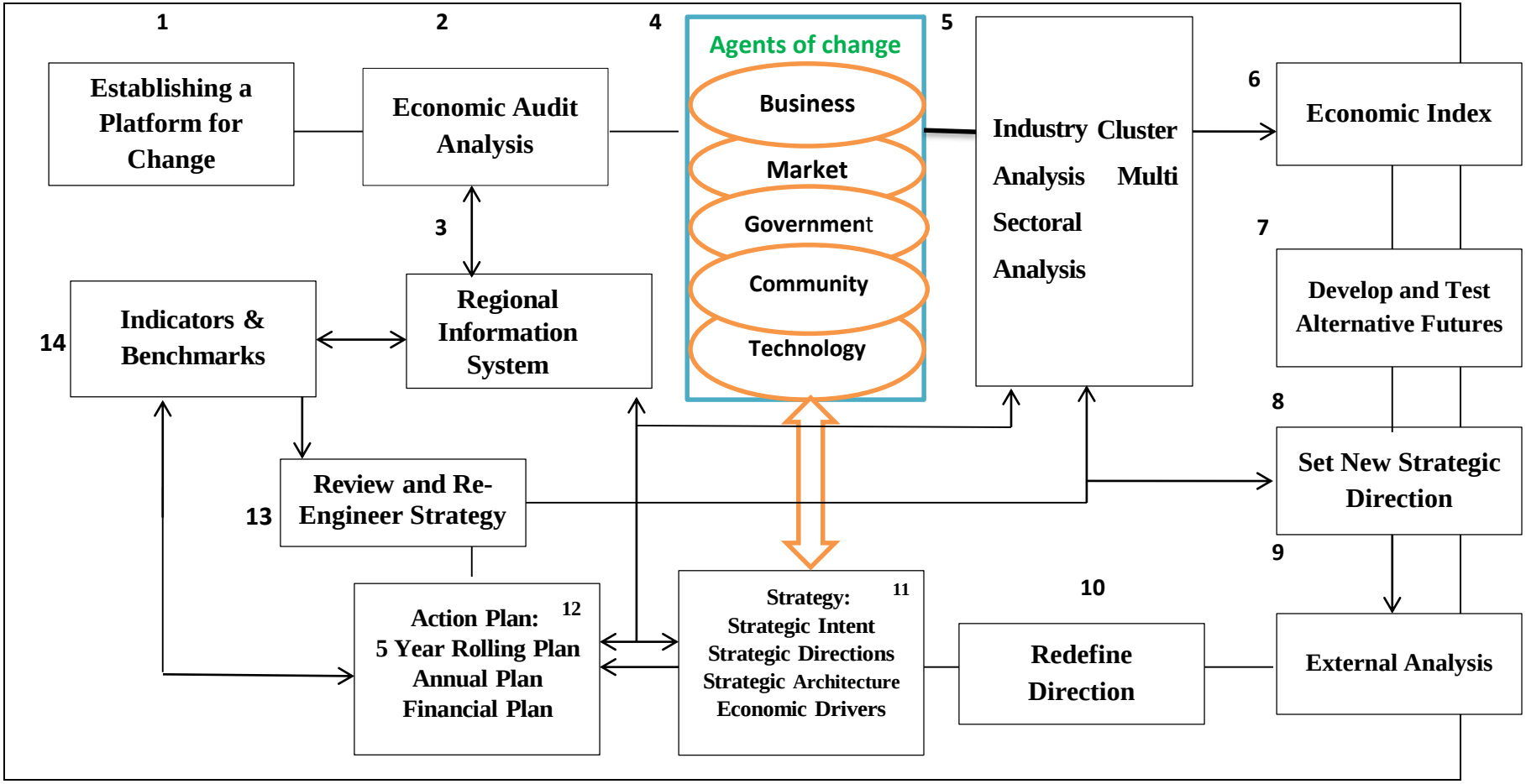


Figure 2: **A framework for operationalizing Local Economic Development Strategy**
(Source: ADOPTED* from*: Stimson, Stough and Roberts, 2006: p. 223)

2.7 Cotton Production in Africa

Cotton production increasingly has been seen as a strategic crop for poverty reduction, food security and economic development in several countries of Africa (IFDC Report, 2013). It has sometimes been referred to as African 'white gold' (Moseley, 2008; Ahwoi in Ghanaian Chronicle, March 2, 2011). Baffes, 2003; IFDC Report, 2013) has noted that, major cotton producing countries in Africa include; Burkina Faso, Benin, Chad, and Mali. These countries have often been referred to as the Cotton-Four (C-4) countries. In West Africa cotton is both an economic and a political activity (Kaminski et. al., 2009). It has remained a principal cash crop used in exchange for other goods (Schwartz, 1996). Bassett, (2001); World Bank, (2004) notes that, under the colonial era, cotton gained further impetus as an internationally traded crop notwithstanding the limited quantities that were associated with African countries.

As noted by Tschirley et al. (2009), cotton is the main source of cash revenue for more than two million poor rural household and a major source of foreign exchange for over fifteen countries in Sub-Saharan Africa. Kaminski et. al., (2009) submits that in the 1950's however cotton production expanded rapidly from 1960 to 2000 production in the African Financial Community (CFA) zone growing at a rate of 9 percent per annum to the extent that by the year 2000 francophone Africa accounted for4.4 percent of total world production, 70 percent of all cotton lint produced in Sub-Saharan Africa (SSA), and 13 percent of international cotton fiber exports. Goreux, (2003) indicates that, cotton cultivation at the outset was promoted in Sub- Saharan Africa (SSA) through public monopolies where national governments actions dictated the allocation of means of production in the cotton sector (see also Kaminski et. al., (2009); Delpeuch and Leblois, (2011). It has now been established that the state should withdraw from productive activities which in the view of Poulton et al. (2004) can be performed more efficiently by the private sector and that public monopolies may lead to rent seeking activities. As a result of the problems of public monopolies such as the growing financial insolvency due to bad management and corruption in cotton parastatalls, state-led strategies have been progressively abolished through privatization and liberalization (Goreux, 2003).

Interestingly Ghana's North share similar ecological conditions with Burkina Faso in terms of vegetation and soils yet whereas Burkina Faso finds itself as one of the C-4 countries in Africa through increased production levels of cotton, production levels of cotton in Ghana is nothing to write home about notwithstanding the comparative advantage of large tracts of idle arable lands in Ghana. The GSGDA I (2010) recognised that an enhanced cotton production has the tendency to create jobs and enhance the economy of the three northern regions; an indication that, the north of Ghana has what it takes to profit from an efficient cotton industry. In a study to find and examine the association between cotton and food security, describe the role of the cotton subsector in the agricultural economies and describe cotton sector contribution to economic growth, poverty reduction and food security in some African countries, the IFDC recognized that, Cotton remains a principal pillar of the agricultural and poverty reduction strategies these countries (Gillson et.al, 2004). This finding suggests that, for cotton to play its role in economic development it must be effectively and efficiently cultivated through sustained conscious public investments and coordinated interventions in the agricultural sector.

Gillson et.al, (2004); Badiane et.al (2002) notes that a major challenge to cotton production in Africa is the market distortions and subsides from relatively wealthy countries especially the United States. In their view, subsidies depresses global prices since they tend to reduce relative cost of production, bring about over-production and result in a glut to affect the livelihood of millions of cotton farmers in developing countries who depend on cotton production as a smallholder cash crop but produce at the going prices. This concern has also been acknowledged by the World Trade Organizations (WTO) arbitration against subsides which indicated that, domestic support measures in the forms of subsidies often tends to be contingent on market prices and result in excess cotton production and exports which translates into low international cotton prices (see WTO case: Brazil vs. USA, 2002). In his study on global trade issues with respect to cotton and developing Countries in terms of trade policy, Baffes, (2003) noted that as a result of US government subsidies policy to US cotton farmers in 2001/2002, the incidence of poverty among cotton growers in Africa and developing countries in the short run rose from 37 percent to 59 percent while the

average incidence of rural poverty (i.e. including cotton growers and other farmers) rose from 40 percent to 48 percent.

It can be suggested that, it is Africa's small share of the global cotton market coupled with the inability to abide by international best practices particularly the non-abatement of hazardous chemical usage due to low income levels that makes African cotton farmers price takers. This study at this point explores best practices in china and Burkina Faso cotton industry to identify what is been done differently to inform cotton sector policy formulation in Ghana.

2.8 Cotton in China

Cotton is one of the most important cash crops in China. It accounts for one percent of GDP. China is the largest producer and consumer of cotton in the world. Since the 1980s there have been around 50 million cotton farmers in China; the cotton-sown area has fluctuated at around 5 million hectares (5.057 million hectares in 2003). China's cotton yield has increased dramatically over the last 40 years. In the 1950s, the average yield was 225 kilograms/hectare. In the 1980s this increased to 750kg/ha and is currently at 1177kg/ha. In 2002/03 China produced 4.92 million tonnes of cotton. Support to cotton producers has been greater in China (Ian, 2004). Total governmental support provided to cotton sector in 2001/2002 was US$1.2 billion. China's intervention in its cotton sector began in 1953 with the introduction of the First Five Year Plan.

Under this plan the central government set production targets and procurement quotas through Chinatex, a public agency. By 1978, a measure to boost cotton production was taken by increasing the price of cotton as well as distributing more fertilizer to cotton farmers. This effort followed the partial abolition of the communal production system under the Household Responsibility System which gave land-use rights to individual farmers in 1980. At the beginning, the Chinese government set a reference price for cotton however, the reforms of the 1999 has allowed actual prices to be negotiated between buyers and sellers. These negotiated prices can now go somewhat below the reference price. The reference price for 1999/00 was set at an equivalent of US$1.21 per kilogram, some 30 percent below reference prices for 1997/98. Prior to these recent reforms, state cotton

companies were obliged to buy the entire cotton crop at national procurement prices. The foregoing indicates that, cotton production in China has also witnessed considerable reforms in a bid to streamline and profit from the cotton sector. High yields, low production costs, improved transportation, relatively few pest problems and a strong government-led push have been associated with improved production levels of cotton in most of the provinces in China. The cotton sector reforms of China have been beneficial since China's position in world cotton production has risen to the number one position.

2.9 Cotton in Burkina Faso

Like many African cotton producers, Burkina Faso's cotton sector strategy has traditionally involved substantial government involvement in both input and output markets (Kaminski et.al. 2009). Characteristic of government interventions in development planning systems in most parts of Africa, government substantial involvement in cotton production in Burkina Faso was associated with widespread inequities, inefficiencies, principal-agent problems and mismanagement among others (Goreux, 2003). The cotton sector of Burkina Faso today has gone through series of sequenced institutional reforms and regulations in trying to address the government failures that plagued the system. Kaminski et.al. (2009) notes that, in the mid-1990s, local farmers groups were made more unified by restricting membership to cotton farmers only and by allowing groups to select their own members. The National Cotton Producers Union was formed and allocated a 30 percent share in the national cotton parastatal (SOFITEX). After the establishment of the cotton farmers into groups, the government partially opened cotton markets by permitting the progressive access of new actors into the input and transport markets, as well as new private cotton monopsonies within regions. Government of Burkina's aim in the process of progressive liberalization of the cotton sector has remained to prevent side-selling. The final activity in the process was the establishment of an inter-professional agreement to elicit cooperation among key stakeholders and a new price-setting mechanism.

Overall, Burkina Faso's share of world cotton exports has tripled over the past decade, and in 2006, cotton provided about 580,000 full-time jobs (up from 345,000 in 1994) for about 18 percent of the economically active population. Food production has also increased in cotton producing areas over the reform period (DGPSA, 2008). Evidence also suggest that

poverty has declined substantially since the reforms began that is, the incidence of poverty fell from 46 percent in 2003 to 38.5 percent in 2007. Rural poverty incidence also fell from 52 percent to 44 percent over the same years. Why is the case of Ghana different? Reforms seem to have failed to add to national output. In analyzing the drivers of cotton growth in Burkina Faso, (Kaminski, Headey, and Bernard 2009) in a partial equilibrium analysis however suggests that cotton reforms explain two-thirds of the threefold increase in production particularly from 1996 to 2006, which enabled farmers to cultivate more land, raise their incomes, and improve food security.

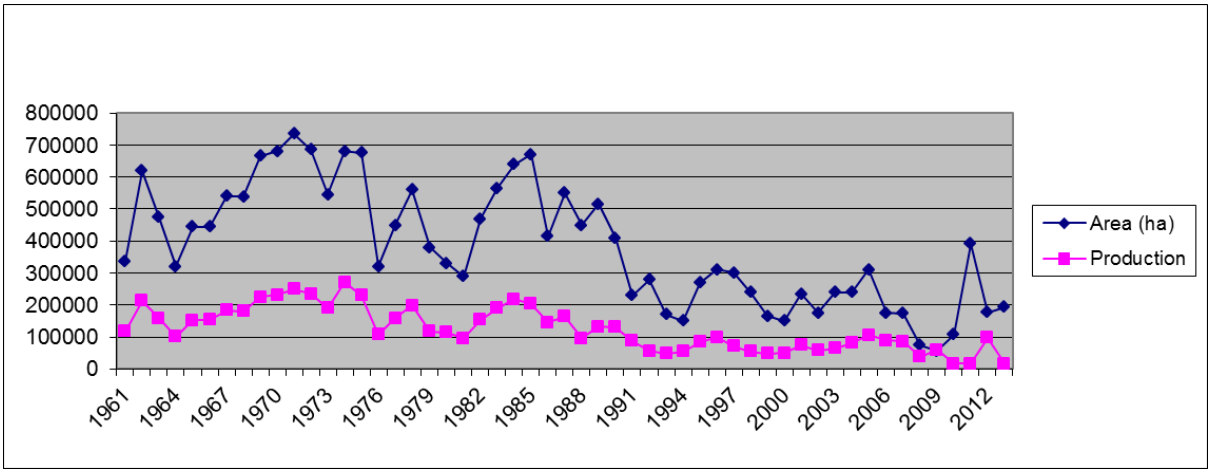
Bassett, (2001) has also noted that the cotton sector in Burkina Faso has benefited from better social organizations of farmers, better public and private institutions, and better infrastructure, ensuring better-functioning markets. Infrastructure is funded by cotton revenues through private (local public goods) and public investments. Since the 1980s investments in the cotton sector have also fostered technology adoption, through high-quality research, cooperation between French and local researchers, farmer organizations and top-down implementation policies. The indication is that, aside the cotton sector reforms, Burkina Faso opted to pursue the cotton sector goals in partnership with other development stakeholders hence the robustness of their cotton sector. The reforms has been accompanied by an upgraded institutional arrangements between producers and other stakeholders and assisted farmers to organize into more professional-oriented associations to Carry out a growing number of responsibilities. This has resulted in higher profit-sharing for farmers, better extension services, fairer quality grading, and better access to agricultural inputs with improved credit repayment mechanisms (Kaminski, 2007).

The uniqueness of the Burkina cotton sector reform model in Sub-Saharan Africa is that it addresses government failures and local realities within current institutional frameworks and cautiously adopts reforms in a piecemeal manner (Kaminski, Headey, and Bernard, 2009). The approach differs substantially from the conventional approaches of other countries, which ignored the peculiarities of the institutional set-ups (Jayne et.al, 1997). Burkina Faso's success in creating an efficient cotton value chain has also been attributed to the conviction that the substantial improvement in institutional capacities enhanced

contractual coordination and collective action which was achieved through the creation of professional cooperatives of cotton growers. This in the view of Kaminski (2011) substantially improved cotton marketing, input credit repayment and yield significant operational cost savings. The improved institutional framework has allowed cotton firms to provide better-quality technical extension services and research in the course of sectoral privatization and ensured coordination of the delivery of public goods, quality control, picking and ginning, and marketing activities.

Cotton Production in Sudan

Cotton is a strategic crop for the Sudanese population (WTO, 2015). It is a source of employment which generates income that satisfies families' needs and services, stimulating the stability, development and security of the population. Cotton is also a viable source of foreign exchange earnings. In addition, its by-products are used as fodder for livestock. The Area (Ha) and production of cotton lint (MT) for Sudan between 1961-2013 is presented to show how the country has managed the sector over the years



Source: WTO, 2015

Hamid (2006) in notes that the success of cotton production in Sudan over the years has served as a prototype for the development of many other irrigation schemes that grow cotton in Africa among others. Key lessons learnt from the Sudan's case is the fact that cotton production improved steadily when the establishment of a large governmental administration with the participation of farmers gave way to the relaxation of the Government's strong grip on the sector allowing for different options targeting

participation between the Government, farmers and the private sector. Additionally, the sector is linked to the poverty-reduction efforts, particularly through the income of farmers, and a number of families depend on it as the main source of income for them to have access to food, education and health. In addition to that, cotton production has helped improve cereal production, hence contributing to food security as a result, farm-families show strong commitment in sustaining the sector.

The major challenge of the Sudanese cotton is that, cotton exports are undermined by industrial country subsidies, which depress world prices for cotton and slows down the production particularly for new entrants into the sector. Hamid (2006) has noted that the production and export of cotton have declined sharply over the past decade due to poor margins. Other Factors contributing to the low profitability and productivity were identified as; high cost of production and low international prices, poor management of water distribution and maintenance, and prevention of the adoption of new technologies.

2.10 Cotton Production and Economic Development in Ghana

The cultivation of cotton involves the use of various inputs that most smallholders cannot afford without resorting to credit (Delpeuch and Vandeplas, 2011). Access to credit for smallholders is severely restricted in SSA due to purported high risk in funding economic activities whose outputs depends so much on natural conditions which are often very difficult to predict with certainty. Cotton production occurs through interlinked transactions where inputs are provided on credit by cotton producing companies through what has come to be known as ‘contract farming’ or ‘out-grower-schemes’. As a major agricultural related activity, cotton is one major industrial crop whose production suits the ecological conditions of Northern Ghana just as cocoa, coffee and rubber are suited and cultivated in the south as such investment in its production with similar commitment as that of cocoa and the other cash crops can help reduce the poverty levels of the north of Ghana. It thus has the potential to lift a lot of poor people from their poverty quagmire if there is efficiency in the production–consumption linkages and management. This view has been highlighted in the GSGDA I (2010) when it was noted that strenuous efforts were required to revive the existing processing infrastructure in the cotton industry to support poverty reduction and improvement in the economies of the three northern regions,

Promote cotton research and development for Ghana to be a market leader and increase support for cotton farmers to produce adequate volumes for the underutilized capacities existing in cotton ginneries.

2.10.1 Conceptual Framework

To analyze the relationship/contribution of cotton production to local economic development in the study districts, this study designed a conceptual model that sought to demonstrate the links between hypothesized essential cotton sector growth pillars to long run sustained economic development drivers. These were in line with the views of Stimson, et. al. (2006) which include;

i. the identification of local level core competencies, how to maintain them, and how to accumulate new core competencies
ii. developing social capital; that is mainstreaming informal relationships into development discourses
iii. building and maintaining strategic leadership
iv. the continuous rejuvenation or re-engineering of the processes of governance and the structure and functions of institutions
v. the more effective and efficient exploitation and management of resources among others

On the basis of the indispensable role of cotton production to development of economies of both the developed and developing countries as demonstrated in the previous sections of this study, it is expected that harnessing and stimulating relationships between and within a local territorial area will lead to a revival of the cotton sector in line with GoG's plans to revamp the sector for some time now in Ghana. It is expected that, gains so generated from the revived cotton sector will translate into an improved cotton industry which should lead to improved cotton production, improved income at the state, business and individual level (Kaminski et.al. 2009; Tschirley et al., 2009), and improved foreign exchange (Baffes, 2007). See figure 3 for details.

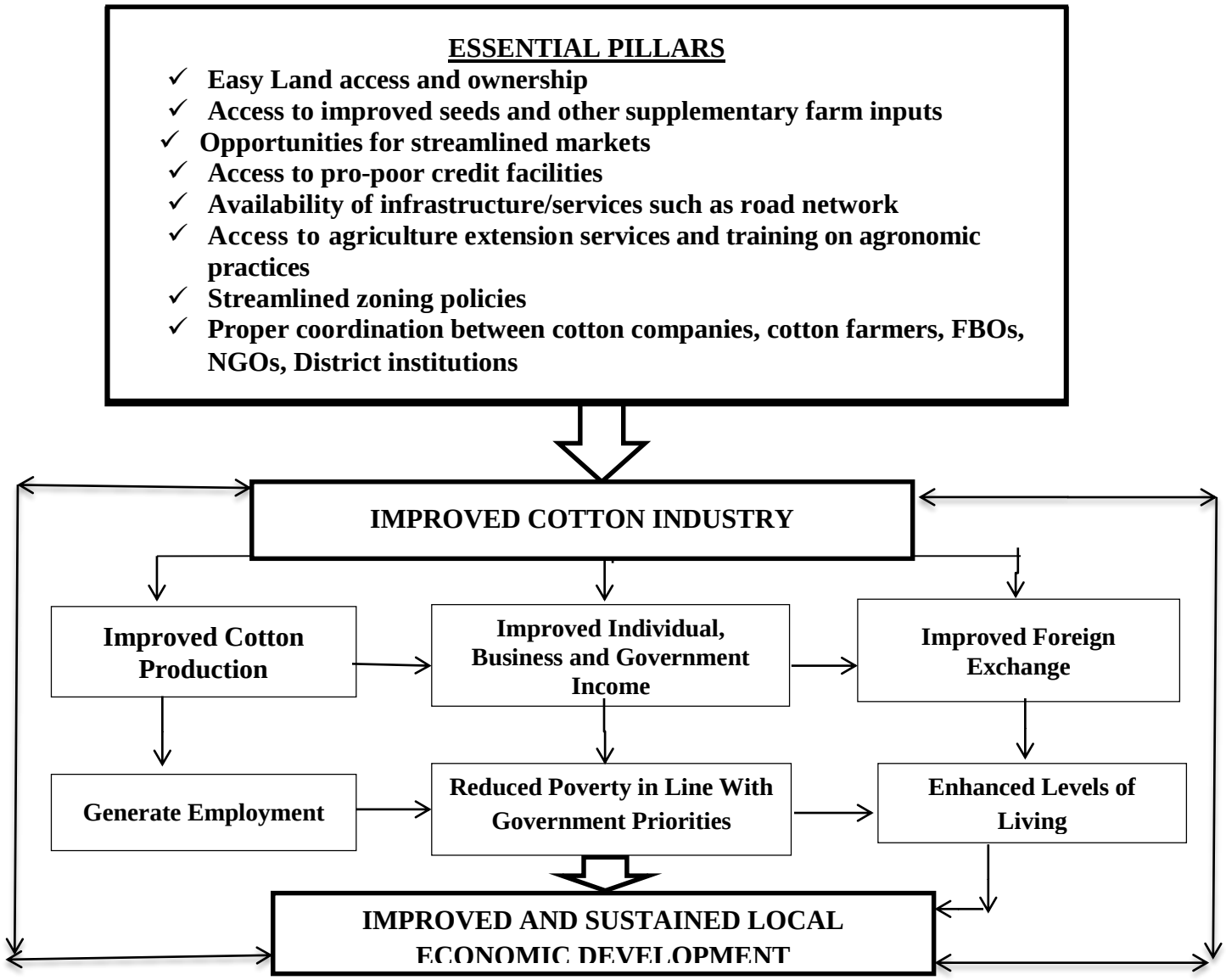


Figure 3: Conceptualized framework of the relationships between cotton production and Local Economic Development.
Source: (Authors' Construction. October, 2014)

The conceptual framework shows that, an revived cotton sector will also mean that, the underutilized ginnery located in Tumu will be resuscitated to create both direct and indirect employment which will ultimately lead to improvement of living conditions of cotton farmers, their communities, districts, the nation as a whole whiles contributing to GoG's poverty reduction efforts (Kaminski et.al. 2009). The complex and intricate relationships can bring about economic booms to promote growth and sustained local economic development which is a necessary condition to ensure improvement in general the living conditions of the study districts. It should also be noted that, there is a reciprocal relation between improved cotton production and local development as indicated in figure 3. In the view of this study, essential pillars necessary to propel growth and ultimate development of local areas include such things as improved land access and ownership, access to improved seeds varieties, access to farm inputs on time, access to agriculture extension services, access to pro-poor credit facilities, streamlined zoning practices, proper coordination between cotton companies and cotton farmers in the cotton value-chain, efficient FBOs, among others. Figure 3 depicts the diagrammatic view of the conceptualized framework showing the relationship between LED and the cotton industry. The cotton sector has however been beset with poor output levels in Ghana since its inception in 1968 hence has undergone numerous governmental and nongovernmental reforms for its revitalization hence the need to seek answers for the poor performance.

2.11 Value Chain Analysis of Cotton Industry

A Value Chain describes the full range of activities that are required to bring a product or service from conception, through the intermediary phases of production delivery to final consumers, and final disposal after use. This includes activities such as design, production, marketing, distribution, and support services up to the final consumer (and often beyond, when recycling processes are taken into account), (Kaplinsky, 2004). Value chains are part of Market Systems (see figure 4). At the centre of the Market System are the value chains that bring products and services to the market. The immediate environment is formed by supporting functions and rules and regulations relevant to the chain. The broader environment around this affects the immediate environment as well as setting its own

conditions. In relation to the cotton sector in Ghana, value chain analysis follows processes and activities as shown in figure 4. Here, the chain contains four major stages to the left through which the sector is expected to function. Each stage of the chain has implication for the employment generation and a rippling effect on the local economy through wages, salaries among others.

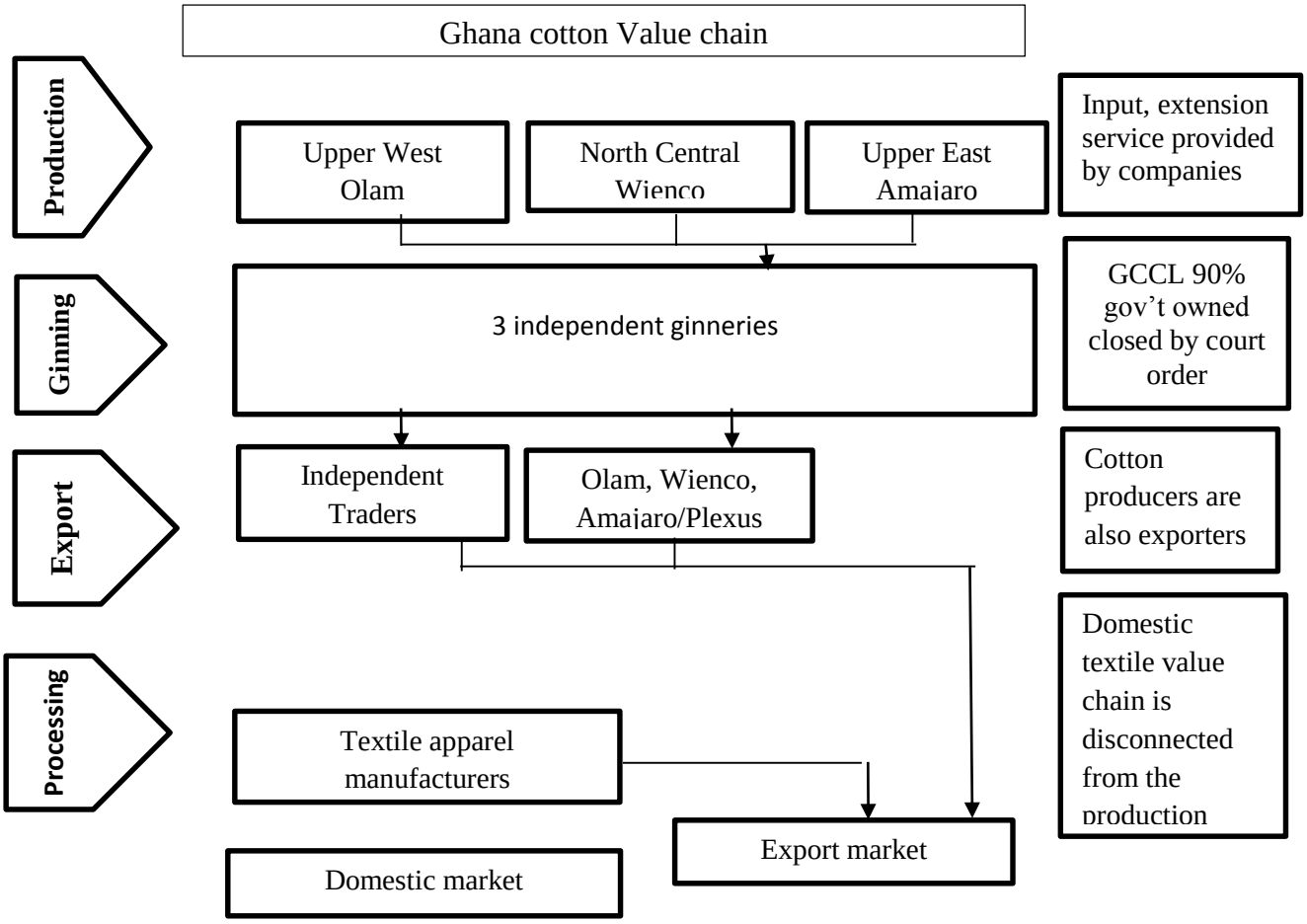


Figure 4: The cotton value chain in Ghana. Source: adapted from : Philippe et. al. 2011

2.12 Cotton Production and the Health of Cotton Farmers

Health is increasingly seen as a robust predictor of economic growth (WHO, 2006). David et. al., (2004) suggests that substantial economic returns are associated with enhanced health. Their study argues that, Poor health reduces GDP per capita by reducing both labour productivity and the relative size of the labor force. The need to attach great attention to the importance of health for economic progress of countries cannot thus be underestimated

since healthy workers are more likely to be productive than workers who are otherwise comparable but for their health (David et. al, 2004). David et. al, (2004) further indicate that, the East Asian Countries (Asian Tigers) generated sustained high growth rates and economic development in their development path mainly because of their high rates of growth in the health of their physical and human capital.

Stevens, (1977) notes in a study that since ill-health saps energies and generates subjective attitudes which militate against innovation, improved health may not only improve physical vigor, it also affects an individual's ability to organize all the attention necessary for forward planning and willingness to assume the risks which are entailed by departures from accepted modes. Stevens' theses also underscore the indispensable role of good health towards the development of economies. Contrary to the aforementioned assertions, Barlow, (1977) as cited in Robert and Oscar, (1980) studying the effects of schistosomiasis in St Lucia discovered that banana plantation workers suffering from schistosomiasis had lower daily earnings and a resultant overall lower earnings but tended to work more days in a week in order to compensate for the difference. Barlow's view points to the fact that differences between output levels in any given economy do not relate only to the health of its people but that the variations depends and vary from disease to disease and from place to place. However, in the view of this study, it is worthwhile appreciating that, health remains an important component in every development initiative geared towards improving a local economy.

Health as a human capital component no doubt is particularly relevant for sustained economic development and social cohesion. However, the pursuits of economic development goals often to an extent negatively influence the health of a given population. Suhrcke et. al. (2005) suggests that, health depends on lifestyles, education, environmental conditions, wealth, and other socio-economic factors among others. In the view of this study, these health determinants are also in turn influenced by the adoption and application of unhealthy practices such as the excessive usage of hazardous pesticides in crop production. This brings to the fore, the need to explore the health effects of the cotton production given its high pesticide requirements as noted in the WHO's hazardous

chemical categorization.The essence, being the generation and description of epidemiological data based on which appropriate local economic development interventions could be designed for the study areas. The Environmental Justice Foundation (EJF, 2007) notes that Pesticides are hazardous chemicals manufactured with the aim of killing, repelling or inhibiting the growth of living organisms by impairing biological processes essential for the maintenance of life.

Pesticides should be harmful to the physiological make up the pests and the disease causing organisms; the control of which they were manufactured but not to non-targets like man, crops and biodiversity. However, several traces of pesticides used as pest control mechanisms in recent times has ended up affecting the health of man and in some cases resulted in death through poisoning. EJF, (2007) suggest that about 60% of all agrochemicals whose impact upon the well-being of humans and biodiversity are immense are applied to cotton worldwide. It has also been estimated that approximately 50% of all pesticides used are applied in cotton cultivation in developing countries. As noted in a study of the Environmental Justice Foundation (2005), the consequences of pesticides particularly those of the cotton producing category are more pronounced and devastating in developing countries.

The reasons have been that, conditions in developing countries such as lack of effective regulation systems, poor labelling of pesticides, illiteracy, insufficient knowledge of pesticide hazards and lack of protective equipment often predispose developing countries to the usage of these hazardous chemicals less cautiously. This study also argues that, high poverty levels of farmers in most developing countries confirm their inability to purchase safety equipment for use during the application of these live-threatening pesticides on the fields to reduce if not prevent poisoning. Again in terms of trade, these highly hazardous chemicals are often dumped in developing country's markets at lower prices compared to other chemicals used in the developed world. Here again, poverty often compel developing country's farmers to demand these hazardous but cheap chemicals even if they are aware of their associated health effects.

In California, Agricultural Statistics Service (ASS) indicates that, nearly 7 million pounds of chemicals are applied annually to about 1,400 Cotton farms a significant portion of which according to the ASS are toxic insecticides, herbicides, and chemical fertilizers. Similar findings have been discovered in investigations in India and Uzbekistan on the impact of acute pesticide poisoning on cotton farmers. Pesticide contamination of water, soils, food produce and the environment has remained a major concern for National Governments, Non-Governmental Organizations (NGOs) and Civil Society Organizations (CSOs) over the years. Identifiable acute symptoms of pesticide poisoning include headaches, vomiting, tremors, lack of coordination, difficulty breathing or respiratory depression, loss of consciousness, seizures and death. Chronic effects of long-term pesticide exposure include impaired memory and concentration, disorientation, severe depression and confusion. In 1997, Paraguay's Ministry of Health and Welfare identified monocrotophos as being responsible for causing paralysis in children living in cotton growing communities. Some Indian researchers in 2003 through a test of some sampled bottled water discovered traces of pesticide residues (chlorpyrifos and dimethoate) both of which are chemicals commonly used for cotton production in India. The researchers concluded that India's drinking water supplies carry potential health implications. At the first Olam Ghana cotton farmer's award ceremony at Tumu, a District Director of MoFA, has warned that, chemical poisoning was a huge risk among farmers when he noted:

> Let us not be more concerned about the yields that we got but the occupational hazards among farmers and the degradation of the environment should be of a worry for all.

Concerns about the effects of cotton production on the health of localities within the study districts have been acknowledge herein. It is relevant at this point to further probe to uncover the various dimensions in which cotton production impacts on the local economy through a study of this nature and to shed more light on the ways forward.

2.13 Effects of Cotton Production on Soil Quality and Food Crop Production

Todaro and Smith (2009) notes that, the livelihood of more than half of the economically active population in the developing world directly depends on the environment through agriculture. Ensuring environmental sustainability as noted in the United Nations Millennium development goals (2010) through careful tilling of the environment and

appropriate soil management practices remains a key issue that has attracted a worldwide attention. The soil is a central part of any farming activity. It is supposed to support plant growth through the supply of mineral nutrients and water. The link between the health of the soil and productivity level of any plant or crop cannot thus be overemphasized.

Gibbs, Dufour and Guerena (2005) assert that, the soil is where plant health begins and ends. They indicated that healthy soils have a capacity to allow a balanced uptake of soil nutrients and to create healthy plants that are less attractive and resistant to pest's damage. Silvertooth (2001) in a study notes that areas of a field with better soils will often produce better plants and yields at any point in time. This is an indication that poor soils therefore have dare consequences on output and yield levels. The advent of various crop pest and diseases the world over has necessitated the usage of pesticides and other chemicals as survival strategies to the devastation often caused by pest and diseases. In a study, the World Agriculture and Environment (WAE) guide (2004) posits that, global cotton production in its initial stages was done without the use of hazardous chemical. Farmers only needed to study the pest cycles and adopt good agronomic practices to reduce the likelihood of pest invasion. Findings from the World Agriculture and Environment (WAE) study suggest that cotton farmers perceived the usage of chemicals to be a cheaper alternative to the use of labour and machinery as pest and disease control measures, resulting in the abandonment of the former methods of pest control. Contrary to this assertion, Todaro and Smith (2009) suggest that, degrading the environment through unhealthy tillage can lead to the destruction or exhaustion of the environment on which crop survival is maximized.

The indication from these viewpoints suggests that, the usage of hazardous chemicals as ones used for cotton production has been due to its relative cheaper cost over other pest control mechanisms. Given the increasing damage these chemicals cause to the quality of soils as noted in this study, it is appropriate to suggest that, the quality of the soil should not be sacrificed for cost. This is because in the view of this study, the social cost associated with the usage of the supposed cost effective cotton chemicals to the larger society far exceeds the private benefits to the cotton producers since the effects of the chemicals leads

to larger environmental consequences. Aktaret.al (2009) suggests that, the term pesticide covers a wide range of compounds including insecticides, fungicides, herbicides, rodenticides, molluscicides, nematicides, plant growth regulators and others; the application of which prevents devastation from disease causing pest and improves plant/ crop yields. Some studies on the impact of pesticides usage suggests that, the application of pesticides has the propensity to Protect crop losses and prevent the reduction of crop yield through weed control (Behera and Singh, 1999), vector disease control (Ross, 2005) and improved productivity (Warren, 1998). Webster et al. (1999) for instance stated that considerable economic losses would be suffered without pesticide use. Their study concludes with the assertion that substantial increases in yield and pecuniary margins are often associated with pesticide use. The widespread use of pesticides under the maxim that, "if little is good, a lot more will be better" as noted by Aktaret.al (2009) has had serious destruction to human and other life forms.

The foregoing suggest that, the use of pesticides in crop production is indispensable given the concomitant wreckage of disease causing pest to crop/ plant production**.** However there have often been concerns that, the chemical composition of most pesticides used in the world over are carcinogenic and are often injurious to the quality of soil rendering soils incapable of supporting the growth of other crops. The World Health Organization (WHO) classifies these highly toxic pesticides under its list of chemicals labelled as Hazardous chemicals. Out of the US$ 2 billion spent on agricultural pesticides every year, at least US$ 819 million are toxic enough to fall into the WHOs list of hazardous Chemicals (HazChems). One category of chemicals whose effects on soil quality has attracted a lot of public attention over the years includes cotton producing chemicals which is one of the main thrust of this study.

According to a fact Sheet from Toxic Free NC (2005) on Pesticides commonly used on cotton production, cotton is one of the most chemical-intensive crops in the world because it requires so many applications of insect-killers, weed-killers, plant growth regulators and other types of Pesticides. This implies that, huge quantities of hazardous substances are introduced to the soil through the cultivation of the cotton Plant. In line with hazardous composition of cotton producing chemicals, it has been noted that cotton production

accounts for about 16% of global insecticide releases to the soil more than any other single crop worldwide thus representing about 1.0 kilogram of all hazardous pesticides applied for every hectare under cotton (World Bank, 1998).The World Health Organization's list of hazardous chemicals contains such chemicals as deltamethrin, endosulfan, aldicarb methamidophos, parathion and alphacypermethrin. However, these also constitute some of the most widely used insecticides for cotton production; a clear indication that, higher environmental costs are associated with cotton production requiring that, environmental considerations should form an integral part of policy initiatives (Todaro and Smith, 2009) for the revival of the cotton sector of Ghana.

Given the startling hazards associated with the usage of pesticides in production activities on surface water, ground water and soil contamination as noted in Kole et al., 2001, Waskom 1994, Roberts and Hutson 1999, Silvertooth, 2001) it can be argued that though the future holds many prospects for cotton production, realizing these potentials require careful tillage of soil resources upon which the cotton plant thrives. Silvertooth's argument finds so much solace in Ghana's cotton sector development trajectory. This is because it has been recognized that Ghana has a high potential to produce cotton in large quantities to meet both domestic and international demands (Philippe, 2011). It is therefore worthwhile noting that, as efforts are been put in place to revive the cotton sector of Ghana, similar should be put in place to mitigate the harmful effects of the chemicals that often characterize cotton production. Silvertooth (2001) warns that, no good could come from the cotton production if the finest cotton varieties and plant-oriented technologies are available without the proper management of nutrition of the soil and the environment. This sends signals that, environmental costs that have been associated with cotton production will often tend to overshadow the economic benefits or gains. In the view of a Kuoro of Gbwollu, cotton production has brought in high toxic chemicals whose long effects has impoverished the lands without any alternative for farmers to make ends meets (GNA, February 28, 2011)

CHAPTER THREE
STUDY METHODOLOGY

3.0 Introduction

Research methodology is an essential component of any research endeavour. It provides the framework on which the entire research is constructed (Brown, 1996). A well-defined methodology underpinning a research is necessary in order to provide logical routes (Kothari, 2004) for replication and verification of research findings. Zikmund, 2003 suggests that, the research methodology is a master plan which specifies methods and procedures for collecting and analysing the needed data for a study. Essentially, the research methodology for this work will recount the specific procedures, rules and methods that will be employed in the study to describe and explain identified trends and patterns. This methodology chapter first and foremost will give a description of the key elements employed in the research which include; the research design, data collection procedures and instruments/tools employed and data presentation and analysis. Also included in this study will be a description of the study areas.

3.1 Research Design

This study made use of both qualitative and quantitative data. The use of qualitative data provided an avenue for exploring and understanding the concerns and non-numeric ideas individuals in the study assigned to attributes in the study **(**Goode, 1962). According to Creswell (2009) using the mixed method design allowed for concurrent triangulation; that is utilized the strengths of both qualitative and quantitative techniques to verify, confirm or disconfirm research findings. Teddlie and Fen (2007); Teddlie and Tashakkori, 2003 notes that mixed designs often involves combining well-established qualitative and quantitative techniques in ways that will adequately answer research questions posed in the study particularly in situations where one design will be unable to render an appropriate appreciation of the subject matter been studied.

The convergence brought about by utilizing the different strands of data often serve to add some strength to the findings as they in their various forms promoted a greater understanding of the subject matter. For instance, perceptions of cotton farmers on

pesticide related diseases were corroborated from the district health centres through an assessment of quantitative statistics of common diseases recorded over the period. This implies that in such a tightknit relationship, the qualitative design went beyond the quantitative coefficients to assign and describe their policy planning implications on people. The overall motivation for mixing both kinds of designs within one study was associated with the fact that neither the quantitative nor qualitative methods was sufficient by themselves to unveil, trends and patterns in the variables of interest within the study (Miles and Huberman, 1994).Utilizing both study designs tended to complement each other and allowed for a more robust collection and analysis of data (Tashakkori and Teddlie, 1998).

The research was a Case study which made use of cross sectional data. The multifaceted nature of the cotton sector performance in the study communities over the years required a study method that was robust and better able to enable a holistic examination. Yin (2003) and Stake (1995) note that, the case study method facilitates the exploration and understanding of complex and rare issues as one prompting this study. Yin for instance defines the case study research method as an empirical inquiry that investigates existing phenomenon within its real-life context especially when the boundaries between observable fact and context are not clearly evident and in which multiple sources of evidence are used. Case study methodology employed for an assessment of attributes allowed the researcher to explore deeper into the situation they are working about in order to better understand existing local capacities and dynamics to inform policy.

Given the several data requirements for an apt exploration of the research problem therefore, the case study method was deemed as an appropriate method for this study notwithstanding its associated inherent inter-subjectivity and biases, and difficulties in guaranteeing internal and external validity since the researcher was not be able to control for certain variables and events affecting the research (Yin, 1994).

3.1.1 Sources, Types and Techniques of Data Collection

Quality research work depends on quality data just as reliability of the findings of a study depends on the sources from which data are collected. This implies that, data constitute the pivot around which the entire work revolves since it is in the analysis of data that a link between theory and reality can be established. It is in the light of the above that it was appropriate for the various sources, types and methods of data for this study be discussed. In this study, both Primary and secondary sources of data were utilized to enhance data credibility (Patton, 1990) notwithstanding the associated difficulties of handling large volumes of data generated by the mixed approach.

- **Primary Data**

Primary data constitute data that have not been previously published and is also derived from a new or original research study collected at source for purposes for which an enquiry has been commenced (Derek, et.al, 1978).

In this study, the methods that were employed in collecting primary data include; Direct Observations of some cotton production processes in cotton fields, Structured, Semi Structured and Unstructured Face-to-Face Interviews with some key informants including District Officers with a stake in Cotton Development, District Agricultural Development Units, Cotton Development Association Heads, Heads of Cotton Production and Processing Companies in the Districts, Non-governmental Organizations operating in the study districts among others. These individual interview sessions were scheduled since they in the view of (Shao, 1999) are much easier to schedule than group discussions and provide an avenue for researchers to further probe for more details about the variables been studied. Shao however cautions that lack of consistency in interview approaches could bring to question the reliability of data collected. Data collected through the individual interviews were cross-checked during Focus Group Discussion to improve their reliability. Some primary data were also collected through Questionnaire Surveys and Focus Group Discussion (FGD) sessions. These methods were employed in ways that permitted active participation of stakeholders in the discussions of this study.

Focus Group Discussions were considered as useful in this study since they were to help in finding out some main issues and concerns of identifiable groups in the study communities. Focus Group Discussions also helped to bring to the fore some issues that were not considered in the usage of the other methods of data collection. The interviews sought to ascertain the views of the institutional and association heads on the role cotton production can play in stimulating sustainable local economic development in the Sissala districts. Some insights pertaining to the cotton sector revitalization programme of the government in terms of its overall progress were also sought from the relevant state institutions in the districts. The district officers were quizzed on the existence or otherwise of a district LED policy. The face to face interviews were considered appropriate in this study since it provided an opportunity to further clarify or probe into some responses to questions, provide prompt feedback and guaranteed the addition or omission of some questions.

The questionnaire surveys sought to assess the position of the cotton farmers on government zoning policies and its effects on output, cotton pricing over the years, access to credit and extension services, land access and tenure arrangements, relationships with cotton companies, the purported negative effects of the cotton production on soil quality and food crop production as noted by the Gbwollu Chief (Kuoro) and some available literature in this study among others. Respondents who were not able to read and write were guided to respond appropriately through translations in the local language.

- **Secondary data**

Secondary data connotes data already collected by others for purposes other than the problem on hand that is being studied but whose inclusion was to contribute significantly towards an appreciation of the subject of this study. Notwithstanding the limitations associated with the secondary source and type of data including the limited knowledge of how the data were compromised in terms of low response and aggregation errors (Zikmund, 2003), they constituted an invaluable source of cheap and large data bank for research and at the same time helping in improving knowledge of what is already known or have been done about the subject been studied. In this work therefore, the secondary source was be utilized to identify governmental and nongovernmental policy direction for

the cotton sector development and as well as identify some major milestones and setback of the sector over the years.

Through the review of secondary data, some best practices attributable to major cotton production giants were also unravelled to inform better policy planning for the revitalization of the beguiled cotton sector in Ghana. In this regard, journal articles, government papers, Newspaper publications, Living Standard surveys, committee reports, District Assemblies briefs, among others constituted major sources of the secondary material which were obtained from the internet and libraries. It must also be mentioned that, one key reason for using multiple sources in the collection of data for this study was triangulation. This was intended to facilitate the corroboration of evidence and illumination of themes that were identified from the different sources contacted for data (Kjell and Rae, 2001). For instance, it helped in identifying the extent of synergy between the institutional evidence from their secondary records and the empirical observations that were gathered from the field which in the view of this study was in line with the definition of LED as noted by (Blakely, 1989).

3.2 Sampling.

The opportunity to study the entire population of people, places, and other variables in a research is an endeavour that most researchers despite the associated generalizability of the findings do not have the time and/or money to undertake (Bobbie, 2007). Sampling methods involves taking a representative selection (subgroup) of the population and using the data collected from the research for generalization on the population (Frey et al, 2000, Berinstein, 2003).

The general universe for the study was the inhabitants of the Sissala East and Sissala West districts in the Upper West Region of Ghana including all institutions that are associated with cotton development at both community and district levels. The working universe for the research included cotton farmers, cotton producing and processing companies and institutions (governmental, non-governmental, groups and associations) in the two districts that have a stake in cotton development. Sample units were drawn from the working universe which were in the two districts that have been purposively selected based on their prowess in cotton production in Ghana over the years.

3.2.2 Sampling Techniques

Zikmund, (2003) identifies two main sampling techniques for the selection of samples in a study to include the probability and non-probability sampling techniques. The non-probability sampling technique is one in which a sample for a study is drawn without using rigorous random selection procedures (Tashakkori & Teddlie, 2003) and where sampling units are selected on the basis of researchers' personal judgments (Zikmund, 2003). In the view of Max-well (1997) as cited in Teddlie and Fen (2007), the non-probability sampling is a type of sampling in which particular settings, persons, or events are deliberately selected for purposes of the important information they can provide that cannot be obtained as well from other randomized choices. Zikmund (2003) also notes that, probability sampling is the process in the selection of a sample where each unit of the sampling frame has a non-zero chance of been selected into the sample. Usually, the probability sampling technique is utilized when the characteristics been studied are heterogeneously distributed. Since it is not everybody in the Sissala East and West districts that is engaged in cotton production, non-Probability sampling techniques were mainly used to source data for this study. The implication of using this sampling technique in a study however is that, the likelihood of selecting any one subject is not known thereby restricting generalizability of the findings to the larger population.

This study took cognizance of the associated limitations with the non-probability technique, however the nature of the subject under consideration warranted its adoption since the variables of interest in this study were not heterogeneously distributed in the study communities.The Purposive and snowball sampling were employed as non-probability sampling techniques for obtaining data from the institutional surveys and interviews and from cotton farmers who were not on the sampling frame which was provided by the DADUs in the study districts. However, simple random sampling and systematic sampling techniques were used to identify cotton farmers who were on the sampling frame list provided by the DADUs.

3.2.1 Sample Size selection and procedure

In selecting the sample size for this study eight (8) cotton producing communities were purposively sampled with the support of cotton production assistants taking into consideration the seed cotton production levels in the districts. Using the list of active cotton farmers provided by the District Agriculture Development Units which showed a total of 2,589 farmers, the sample size generated from the Raosoft online sample size calculator with a confidence level of 95% and 5 % margin of error was 335. This sample was obtained through a systematic process by dividing the total number of farmers by the sample (2589/335=7) and choosing the 7th name from the list again and again until the total sample of 335 was obtained. This sample was further distributed among the 8 communities identified for the study. This means that, 41 farmers were selected from each community. The 41 farmers from each of the communities were further chosen using the table of random numbers where numbers were picked from the table in relation to the community lists until the desired sample size was obtained. For the institutional surveys, the research adopted the purposive sampling technique to identify all institutions in the study districts and communities who in the view of the study had a stake in the cotton production chain and were better placed to help in shedding more light on the research questions raised in this study. In the end 335 cotton farmers and seven (7) institutions were sampled for the study due to their association with cotton production in the study communities.

Table 3: Number of samples

District	Communities		No. of Samples
Sissala East	Kong Sakai Kowie Tumu	Cotton Farmers	164
		Cotton Farmers Associations	3
		Institutional surveys	Heads of allied cotton sector related institutions DADUs , CPC, NGOs, DAs, CPAs, EPA, DHS
Sissala West	Pulima Lilixia Nahadakui Gbwollu	Cotton Farmers	164
		Cotton Farmers Associations	3
		Institutional surveys	Heads of all allied cotton sector related institutions DADUs, CPC, NGOs, DAs, CPAs, EPA, DHS
Total sample			**348**

❖ Data Collection

Structured questionnaires containing both open and close ended questions were designed and administered in this research to respondents. Literate respondents self–administered the questionnaires whiles respondents who were unable to read and write were guided through translations. The translations were necessary in order to overcome language barriers that tended to affect the data collection process and was capable of influencing the response rate to the questionnaires. To ensure that the translations did not distort or obliterate the meaning of the questions, supporting field officers were guided through a pilot study of the data collection tools before the actual data collection commenced. This was also necessary in order to identify possible problem areas associated with the various data collection tools for redress before the actual data collection.

In an attempt to address objective four of this study, respondents were questioned on their experiences of the effects of cultivating cotton on soil fertility. The intent of this analysis was to assess from the perspectives of the cotton farmers, the effects of cotton producing related chemicals on soil quality which as has been noted in the literature review for this study. Knowledge from this analysis was deemed to be useful in designing strategies for

improving the overall health of the soil for sustainable food crop production in the study communities in particular and other cotton producing districts in the country.

Data Collection Tools

Tools such as interview schedules, checklist of themes for semi structured interviews and FGDs, questionnaires with open and close ended questions were used to collect data. It should also be indicated that, what is been said in the focus group discussion sessions were recorded using tape-recorders and note-taking. A summary of the entire research methodology has been presented in table 2 below.

Table 2: Summary of Data requirement and their sources

Issue/objectives	Data required	Sources of Data	Mode data was collected
Role of the cotton industry in promoting Economic Development	Income of cotton farmers, output levels, access to credit, loan amortization, Potential for cotton sector growth nature of relationship between cotton companies and out-growers	Cotton farmers Cotton companies, Financial institutions, DADUs, District Assembly Cotton production Associations, others	Questionnaire and interviews (structured, unstructured)
Government's policy options for LED in the district	Gov't role in cotton Dev't; policy options	Cotton farmers DADUs, DAs, Cotton production Associations other	interviews Focused Group Discussion (FGDs)
Effects of cotton production on the health	Production safety, health hazards, common diseases for cotton farmers, nearness of water sources to cotton farms	Cotton farmers District Health centres others Cotton production Associations	Questionnaire interviews and interviews
Effects of Cotton production on soil quality and food production	Experiences of cotton farmers on soil quality and nutrient level of cotton and non-cotton producing fields, Sustainable soil management practices, types of cotton chemicals tendencies of abandoning food crop production for cotton institutional capacities	Cotton farmers, DADUs, EPAs, cotton and non- cotton production fields, Cotton production Associations, others	Questionnaire and interviews FGD

Source: adopted and adapted from Dinye (2013)

3.3 Data Analysis and Presentation Techniques

In a study, Karma (1999) described data analysis as the computation of observations in a research with the intent of identifying and describing patterns or relationships that might exist in data-sets. Data analysis is therefore a very crucial part of research since it is the stage where trends between variables and within groups are identified to address the research questions.

Data analysis stage is also where links between empirical observations and literature in the study are established to inform policy planning, formulation and implementation. Creswell (2012: 174) notes that, data analysis involves several interrelated steps which were identified to include: the preparation of the collected data for analysis, running the analysis, reporting the results and discussing them in line with the formulated objectives of the study. In light of the above, the quantitative data collected in this study were analysed with the aid of computer software such as: Microsoft Excel (MS-Excel) and Statistical Package for Service Solutions (SPSS). Some variables were also cross-tabulated whiles hypothesis were tested for independence of means and their extent of relationship using the ANOVA test of statistical independence to provide enough evidence for conclusions in this study.

The qualitative data which were collected through face-to-face interviews and FGDs interspersed with audio recordings were transcribed into meaningful forms for discussion in the next chapter. These qualitative data were reduced to themes and categories with less emphasis on statistical tests. The transcriptions were supported by direct extracts from respondents in paraphrased and/or original citations. Polkinghorne (1991) notes that, the qualitative analysis is useful in studies since its inclination towards categorization and themes generation enhance the understanding of human phenomena as one prompting this study. In order to analyse objective four of this study, the lived experiences of cotton farmers and other groups contacted for the study were sought on the effects of cotton production on soils.

The data so analyzed were presented in frequency tables, bar graphs, percentages, pie charts, cross tabulations, descriptive and inferential statistics and pictures to facilitate the identification of trends and patterns associated with the variables of interest. It should be

noted that, though both quantitative and qualitative methods of analysis and presentation will be used, the study is likely to be biased toward the qualitative descriptions of attributes since more qualitative data than quantitative ones are likely to be collected in order to understand the state of the cotton production in the study communities.

3.4 Ethical considerations

This study recognized that society represented the laboratory for social science research with human beings serving as the objects being manipulated with the expectation of some variations. This view is consistent with (Singh, 2006; APA, 2003) who noted that it was appropriate to observe certain research ethics since the activities of the sample subjects are often closely associated with data collection process. The APA, (2003) for instance sets out guidelines which underpin social research

The following ethical issues were observed in process of data collection:

- The respondents were given the option and freedom to decline to participate if they so desired.
- For confidentially of research data, names of respondents were not taken and used in analysis.
- The researcher was careful not to violate or invade the privacy of respondents.
- Interview guides were sent to respondents in good time before the researcher followed up.
- Issues of concealment and deception was avoided as the researcher took some time to brief respondents on the rationale of the research.

3.5 Brief Overview of Study Districts

This study was undertaken in eight (8) communities; four (4) from each of the two districts within which this study was situated. These communities respectively represented the Sissala East and Sissala West districts of the upper West region of Ghana referred herein as the Sissala area. The Sissala East and West districts are found within the Guinea Savannah region with vegetation being savannah woodland. In particular, the Sissala district is mainly drained by the Sissili River and its tributaries flowing in the south-eastern direction to join the White Volta.

Temperatures are high throughout the year with a minimum of 23ºC at night and a maximum of 42ºC during the day and this favours plant growth. The mean monthly temperature ranges between 21ºC and 32ºC. The highest monthly maximum temperature rises up to 40ºC before the rainy season in May with lowest minimum temperature falling to about 12ºC in December when the harmattan winds from the Sahara dries up the vegetation. The area is characterized by the conventional rainfall and a single rainy season from May to September/October. These tend to affect all year round farming as found in the southern part of Ghana. The soil type in these districts included the savannah ochrosols, tropical brown earths and Terrace or alluvial soils. It was indicated that, these soil types were well suited for the production of cereals and cash crops such as cotton. The landscape is gentle undulating and the climate is tropical continental. The entire Sissala area is bordered to the northwards by Burkina Faso, southwards by Nadowli and Wa East Districts. It is also bordered eastwards by Kasena-Nankana District and to the westwards by Jirapa and Lambussie Districts.

As noted by the Ghana Statistical Service (GSS), final results of the 2010 population and housing census showed that whereas the population of Sissala East districts 56,528 that of the Sissala West district was 49,573. An analysis of the population figures showed that, women constituted the majority in both districts. Available data from the GSS also showed that, the districts were sparsely populated accommodating less than 38 persons per square kilometer since the regional population density stood at 38 persons per square kilometer. The land is vast and suitable for agricultural (livestock and crops) production. The composition of the Sissala East and Sissala West district economies is typical of the Ghanaian economy. Whereas the Sissala East has large agricultural sector constituting seventy-six percent (76%), service and commerce fifteen percent (15%), and the industrial sector nine (9%), in the Sissala West district, the agriculture sector employs about 90% of the labour force. The Sissala area is basically rural with more than eighty percent 80% of the people living in rural settlements who are also engaged in farming. The people practice subsistence farming with only a few engaged in large scale cotton farming. Other crops cultivated in the area are cereals such as millet, maize, sorghum, rice groundnut, cowpea and yam. The district officers note that, the physical characteristics of the district support

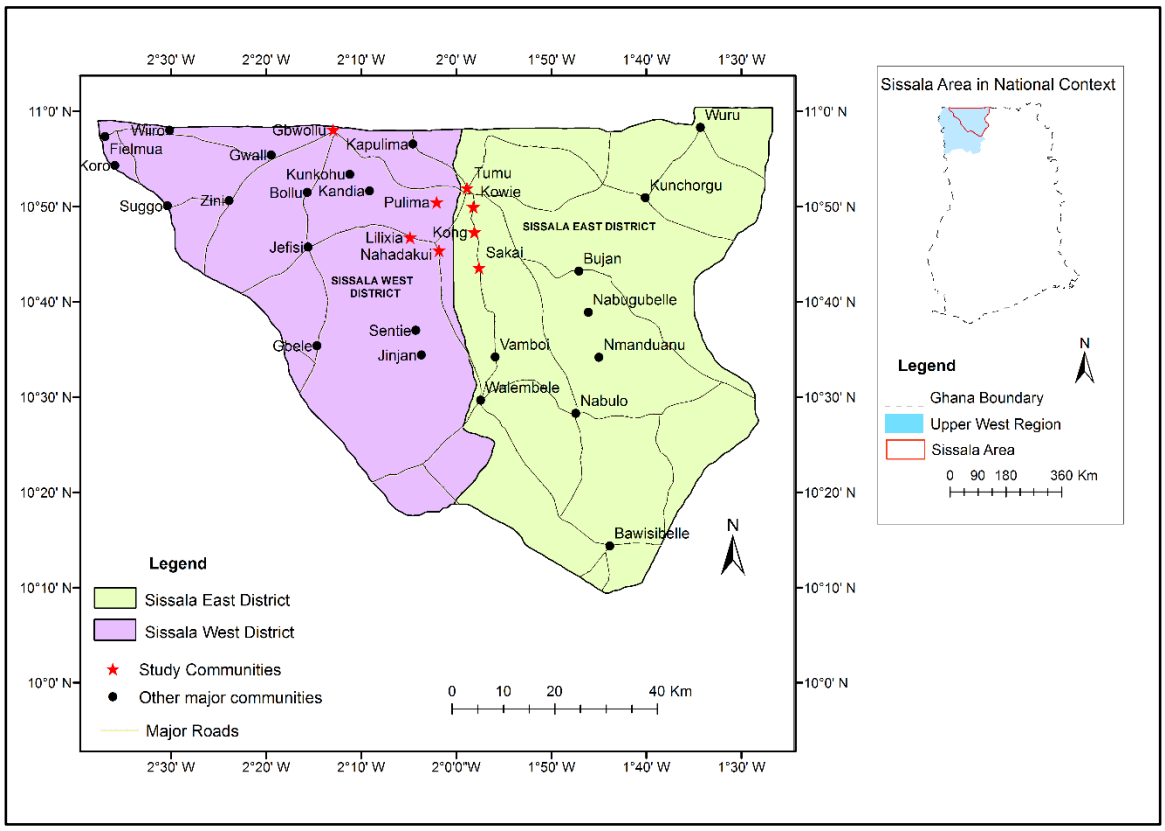
a viable agricultural base, which is been underexploited. Cotton ginning has great potential in the district and in fact, the Ghana Cotton Company has a ginnery in the area. Thus, there is strong potential for linkage with the textile industries located in the south of the country.

Source: SEDA/ SWDA

Summary of Chapter Three

The Research design and methodology was the main focus of this chapter. It highlighted the research design and described the sampling processes including the tools and methods of collecting relevant data for the study. It also revealed the tools used for the data gathering and how the data were collected. The data collected does not make meaning in itself thus requires additional manipulation the make them information worthy. It is the quest to add some meaning to the raw data obtained from the field that the next chapter (4) comes to the fore to throw more light on the data and translate them into meaningful information.

Map of Study Districts



Author's Construction, February, 2015.

CHAPTER FOUR

PRESENTATION OF DATA, ANALYSIS AND DISCUSSIONS

4.1 Introduction

The analysis and discussion of findings is the main focus of this chapter. The analysis is based on primary data collected from the selected communities for this study. Both the qualitative and quantitative data gathered from the interviews and questionnaires administered are presented and incorporated in the discussions. It is in this chapter that some meaning have been made out of the raw data, propositions confirmed and some inferences or generalization made about variations between and within the parameters.

4.2 Description of Cotton

4.2.1 The Cotton Plant

Cotton ("Kunkumu as it is known in Sissali language") is a soft, fluffy stable fibre that grows in a boll or protective capsule around the seeds. It is produced by small trees and shrubs of the genus *Gossypium*. The plant grows upright and has branches spreading in all directions. It has broad leaves with three to five lobes, and a taproot that may grow as deep as 4 feet into the ground. The study discovered that cotton was a natural vegetable fibre of great economic importance which was used as a raw material for cloth and many other products. Farmer respondents noted that all else remaining the same, cotton bolls matures in 45 to 60 days.

In finding out the sources of livelihood for the respondents, it was revealed that they were both cotton farmers and food crop farmers. In this particular question, respondents were given the opportunity to select multiple responses. It can be seen that 327 (99.7%) confirmed they were food crop farmers. What this means is that almost everybody who was a cotton farmer was also a food crop farmer. On the other hand, few of them who were cotton farmers were also traders as well as engaged in some form of formal employment. From the data gathered, it is clear that almost respondent in one way or the other engaged in some kind of farming with cotton farming being the dominant and remained a major source of livelihood for farmers. (*It must be acknowledged that this might be because the target population was cotton farmers).* This revelation is consistent with the study of

Sharma (1998) when it was recognized that nearly 15 million farmers spread out in over 10 states are dependent on cotton cultivation for their livelihoods. Also, the fact that farming requires physical energy explains why the very energetic age groups formed the majority of the respondents. Table 21 shows a cross tabulation between source of livelihood and age groups.

Table 21: Sources of Livelihoods of Respondents

Source of livelihood and age group

		Age group								Total
		18-23	24-30	31-35	36-40	41-45	46-50	51-55	56-61	
Source of Livelihood	Cotton farming	21	110	48	83	25	23	9	8	**327**
		95.5 %	100.0%	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	
	Food crop farming	16	101	48	83	25	23	9	8	**313**
		72.7 %	91.8%	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	
	Trading	0	12	0	7	8	1	0	0	**28**
		0.0%	10.9%	0.0%	8.4%	32.0%	4.3%	0.0%	0.0%	
	Formal employment	1	6	9	4	1	0	0	0	**21**
		4.5%	5.5%	18.8 %	4.8%	4.0%	0.0%	0.0%	0.0%	
	Other	0	10	0	0	0	0	0	0	**10**
		0.0%	9.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Total		**22**	**110**	**48**	**83**	**25**	**23**	**9**	**8**	**328**

Percentages and totals are based on respondents.
a. Group

Narayanamoorthy and Kalamkar, (2006); Rajinder et. al., (2007) have noted that the adoption of Bacillus Thurigiensis (Bt) cotton was necessary in a bid to increase productivity of cotton, protect the crop from bollworm and other pest/insect attacks and to reduce the use of pesticides in cotton. This viewpoint was corroborated in the current study when the Cotton production Assistants indicated that the adoption of Bt cotton was long overdue since the current species (the Gossypium hirsutum) was saddled with lots of production challenges in terms of pest and diseases in recent times.

4.2.2 The Cotton Production Process in the Study Districts

Cotton production in the Sissala area is undertaken through the interaction/partnership of two key bodies; the cotton production companies and the farmers. Other organization only come in to help disseminate information on effective and sustainable farming practices.

The study found that, farmers were organized into groups of between five and ten members. The companies then work through field agents known as Cotton Production Assistants (CPAs). The CPAs register interested cotton farmers during the commencement of the farming season who serve as the link between the farmers and the companies in terms of delivering input, ploughing the fields, and buying seed cotton among others.

An interview with a CPA in the Sissala East revealed that, the cotton farmers are organized into groups as a strategy to address the diversion of the cotton production inputs for other crops and to make group members severably liable for loans granted to them such that if a member of the group should default, the cost is borne by all the group members. The study again revealed that, each group and community had chairmen who monitored the activities of group and community members respectively. With this arrangement in place, any input sent to the groups must be in the known by the community chairmen. In the Sissala West district, a CPA indicated that, the mechanics of the grouping is such that if at the end of the production period, one farmer is unable to settle his indebtedness for the input used, the rest of his debt is deducted from the proceeds of the other members. When this happens, it is the responsibility of the member in debt is to look for the money to settle the other group members.

It was added that in the event that all members in the group are unable to service their loans through adequate supply of seed cotton, the group is given some time to pay beyond which time an injunction to confiscate assets of group members will be sought from the courts by the company. Working through groups thus serve as a check on each member to ensure that, there is peer monitoring in the usage of the inputs supplied to farmers to production. Cotton Production Assistants from both study districts noted however that, through working groups was able to reduce some of the diversionary tactics, there was more room for improvement since some chairmen and members still found ways of diverting cotton producing inputs.

The field agents thus regularly visit the farmers in their homes and farms during the cotton cultivation period to offer agricultural extension services and monitor the use of the inputs supplied until the cotton is harvested and sold to the company. These agents are also

rewarded if they were able ensure that farmers under their supervision settle their indebtedness.

4.3 Socio-Demographic Characteristics of Respondents

This section of the research was intended to ascertain the demographic characteristics of respondents. Issues such as sex, level of education, sources of livelihoods, marital status among others were solicited. This helped in the establishment of relationships and variations between respondents and to ascertain how these demographic attributes influenced cotton production.

A total number of 348 questionnaires were sent to the field to be administered to respondents. This included seven (7) key informants (institutional Heads) and six (6) cotton producing groups. These categories of people were contacted as key informants based on their in-depth knowledge and experiences regarding the activities of cotton as well as the local economic issues.

In relation to the sex of respondents, the distribution was bias towards men. The male component formed 97% of the sample while the female component formed only 3%. However, it is an indication that women generally supported their husbands to produce cotton in the Sissala East and West Districts and were thus not active owners of cotton farms. The views of some women were only necessary to confirm some issues that came up from the data. In terms of marital status, 13% were single while 87% were married. Since the target population was adults and farmers, it was not surprising that majority of the respondents were married.

In terms of ethnicity, Sissala constituted 80%, Waala constituted 4%, Dagaaba constitute 13% whiles other (Moshies, Kasenas) constitute 3%. The Sissala constituting the majority is consistent with the final census results which places the Sissala as constituting 88% in the Sissala East. In terms of the religious composition of respondents of the study, 81% were Moslems whiles 19% were Christians. The educational attainment of respondents was very low. More than half (56%) of the sample did not have any form of formal education, 13% had primary education, 13% had attained Junior High level, 8% had attained SSS/SHS whiles 10% had attained some level of tertiary education and training. See table 4.

Table 4: Socio-Demographic Characteristics of Respondents and study community Cross tabulation

		Study Communities									%
		Kong	**Sakai**	**Kowie**	**Tumu**	**Pulima**	**Lilixia**	**Nahadakui**	**Gbwollu**	**Total**	
Sex of respondent	Male	37	40	41	40	41	40	40	39	318	**97**
	Female	4	1	0	1	1	1	1	1	10	**3**
Marital status of respondent	Single	6	8	4	1	6	6	4	7	42	**13**
	Married	35	33	37	40	36	35	37	33	286	**87**
Ethnicity	Sissala	33	34	35	33	38	34	30	24	261	**80**
	Waala	0	5	4	2	1	2	0	0	14	**4**
	Dagaaba	3	0	2	6	3	4	7	16	41	**13**
	Other	5	2	0	0	0	1	4	0	12	**3**
Religion	Islamic	34	35	31	30	36	35	30	35	266	**81**
	Christianity	7	6	10	11	6	6	11	5	62	**19**
Level of education attained	No formal education	26	23	24	24	20	22	23	22	184	**56**
	Primary	3	5	5	6	7	4	5	7	42	**13**
	JSS/JHS	3	4	2	2	3	3	4	4	44	**13**
	SSS/SHS	6	5	6	5	7	6	7	2	13	**8**
	Tertiary	3	4	4	4	5	6	2	5	33	**10**

Field study, February 2015

The age distribution of the respondents indicated that the majority were within the ages of 24 and 40. The age groups 24-29, 30-35 and 36-41 had a percentage share of 33.5, 14.6 and 25.3 respectively. As can be seen from Table 5, the 60-65 age group recorded the least percentage share of 2.4. The age distribution of the respondents can be seen as depicting the ideal situation under study.

Table 5: The age distribution of the respondents

Age Group	Frequency	Percent
18-23	22	6.7
24-29	110	33.5
30-35	48	14.6
36-41	83	25.3
42-47	25	7.6
48-53	23	7.0
54-59	9	2.7
60-65	8	2.4
Total	**328**	**100.0**

Field Survey, February 2015.

4.4 Analysis of the Relationship between Educational Attainment and Cotton Sector Performance.

The study again went further to find out whether the educational attainment of respondents could have an influence on the poor cotton production. Here too, the mean cause of poor cotton production was determined among the educational attainment of respondents. It intended to find out if there will be any difference between the means. A One-Way ANOVA test was conducted and the results displayed in Table 6 and Table 7

Hypothesis

The educational levels of respondents have an influence on their perception about the cause of poor cotton production.

Descriptive

Table 6: FACTORS THAT MOST ACCOUNT FOR POOR COTTON PRODUCTION

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
No formal education	184	1.84	1.176	.087	1.67	2.01	1	4
Primary	42	1.71	1.111	.171	1.37	2.06	1	4
JSS/JHS	25	2.04	1.172	.234	1.56	2.52	1	4
SSS/SHS	44	1.80	1.212	.183	1.43	2.16	1	4
Tertiary	33	1.85	1.149	.200	1.44	2.26	1	4
Total	328	1.83	1.165	.064	1.71	1.96	1	4

Field Data, February 2015

Table 6 shows that the mean cause of poor cotton production is 1.84, 1.71, 2.04, 1.80 and 1.85 for no formal education, Primary, JSS/JHS, SSS/SHS and Tertiary respectively. Though the means are different, one cannot conclude that the difference is statistically significant. A One-Way ANOVA test is required to determine whether or not the difference is significant. The One-Way ANOVA output in Table **7** shows that there is no significant difference between the mean causes of the poor cotton production among the various levels of educational attainment. With this revelation, the null hypothesis that the education levels of respondents have an influence on their perception of the cause of poor cotton production is maintained.

Analysis of Variance (ANOVA)

Table 7: Factors that Most Account for Poor Cotton Production

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.736	4	.434	.317	.866
Within Groups	442.042	323	1.369		
Total	443.777	327			

Field Data, February 2015

4.5 Cotton and Economic Development

4.5.1 Views of Directors and Institutional Heads

An Assistant District Director in one of the district indicated that, cotton indeed has a potential to engender local economic development. It was noted that apart from the incomes farmers make from producing cotton which enhance their living conditions, the assemblies make some revenues as well from the taxes the cotton company pay before lint

cotton is transported outside the district to Accra and Tema among others. This view is consistent with what was obtained from the agriculture units who indicated that notwithstanding the excesses emanating from the wrongful use of cotton chemicals and the deforestation associated with cotton production in the district, cotton production has contributed towards improved living conditions of the local people who directly or indirectly engaged in cotton production. The Focus Group Discussions conducted confirmed the views of the institutional findings. Farmers during the discussions noted that, cotton production was highly beneficial and dear to their hearts as one farmer noted:

> Through cotton production, I was able to complete my building project, paid my children school fees and bought a motor bicycle. It is so sad however that the company in charge folded up, I really wish that production resumes as soon as possible.

4.6 The Status of Cotton Industry in Districts

4.6.1 Cotton Producing Company

The study set out to ascertain which company was in charge of the production of cotton in the study districts as per government of Ghana's 2010 cotton sector reforms and zoning. A visit to the cotton company in Tumu revealed that Olam Ghana Limited which was in charge of supervising the production, buying and processing of seed cotton had folded up relinquishing their rights to Masara Narsiki. Managers of Olam were thus not available to respond to interviews which were scheduled for them. An interaction with an officer of the new company revealed that the company has still not started full production of cotton since their main focus in the meantime was on the production of maize and soybeans. It was however indicated that full production of cotton is likely to commence in the 2015/16 farming season. Farmers were required to indicate the extent of their satistisfaction with the terms and conditions of the Olam Ghana limited compared with other companies that have operated in the communities over the years. The bar graph below presents the findings to this question.

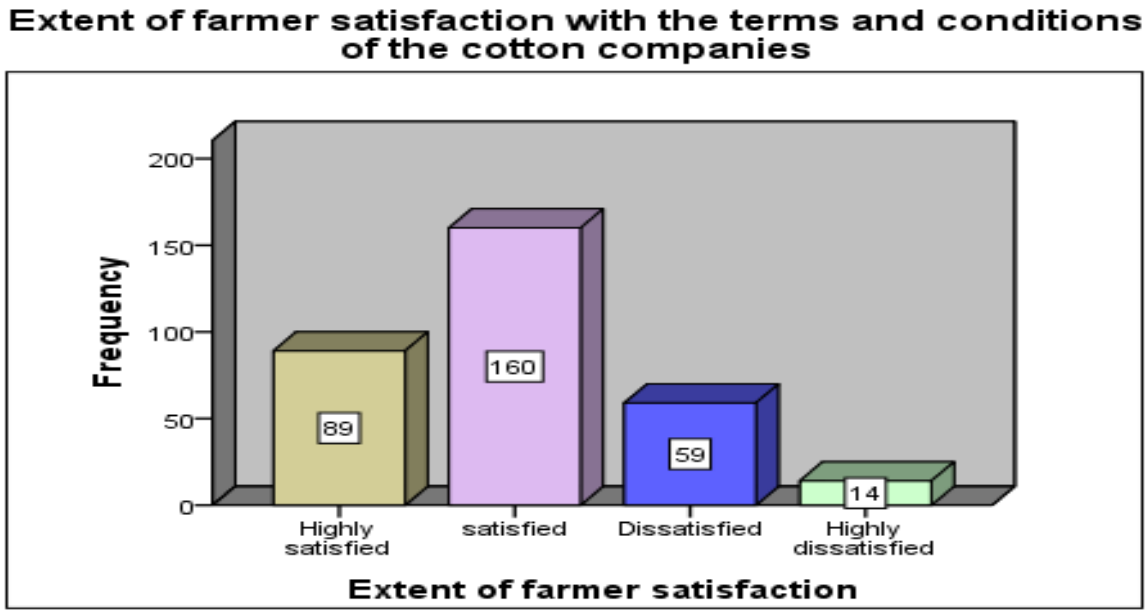


Figure 5: Extent of farmer satisfaction with the terms and conditions of cotton companies, *Field survey, February, 2015*

The indication from the graph is that 89 (27.6%) of the individual respondents were highly satisfied, 160 (49.7%) were satisfied whereas 22.6% of respondents were dissatisfied and highly dissatisfied with the companies terms. The general impression as revealed from the graph is that, notwithstanding the few challenges associated with the prices which were offered for the seed cotton supplied by the farmers, farmers were satisfied with the terms and conditions of the company.

Olam Ghana limited was the cotton company that use to supervise cotton production activities within the study area but has folded up. The fold up of Olam in cotton production in the district might have affected cotton farmers in one way or the other which needs to be investigated. Respondents' opinions were solicited regarding the reasons accounting for Olam's fold up. They were given the chance to give multiple reasons if any.This was to apprise the study on the reasons why the company however folded up after they made a bumper harvest in the 2010/2011 and 2011/2012 farming, five Cotton Production Assistants (CPAs) were engaged in a discussion. The views of the CPAs and farmers were not different. Table 8 is a multiple response table generated to present the reasons why the company had to fold up.

Table 8: Reasons for the Collapse of Olam Ghana Limited.

		Responses	
		N	Percent
Why Olam Ghana Limited had to fold up in relation to cotton production in the study districts.	High default rates	107	13.5%
	Low cotton prices	122	15.4%
	Diversion of inputs for other crops	108	13.7%
	Diversion of seed cotton to other companies	97	12.3%
	Weather Conditions	95	12.0%
	Lack of government support	123	15.6%
	Other ***(failure to obtain desired level of farmers, favorable term from Masara)***	138	17.5%
Total		**790**	**100.0%**

Field survey, February, 2015

From the tabulated responses, it is clear that, the company folded up because the required number of farmers which was needed was not met in spite of the favourable production that existed for cotton production. In the view of respondents, the terms and condition that were introduced to farmers by Masara Narsiki also contributed to the dwindling of the number of farmers who were interested in the production of the cotton. Among the responses therefore, whereas (138) 17.5 percent of farmers confirmed these factors, (95) 12.0 per cent of farmers attributed the collapse of the company to unfavourable weather conditions**.** It must be noted that the collapse of the company has implications for Local Economic Development since the entire cotton value chain has been distorted. People have been laid off as a results, and other economic activities which flourished due to the production of cotton has been severely affected. There is thus an urgent need for the revival of the sector.

4.7 Access to Credit Facilities

Every economic venture often require some form of capital injections based on which some future benefits are expected to accrue. In view of this, the study sought to find out how financial resources were accessed by the cotton farmers to support their production. The findings shows that, cotton production was pre-financed. That is; companies provided all resources necessary for the production to farmers on credit which was deducted from the proceeds farmers made before any excess cash was paid to the farmers as profits. Apart from this form of arrangements, farmers indicated that, they did not have access to any

other form of access to credit. The farmers noted that, this was because they did not have any collateral to facilitate their ability to access funds. They noted that, even the group collateral which was working quite well has also taking a nose dive since some members of the groups sometimes default. In their view, access to such funds would have made it possible for them to produce without being pre-financed so they could have a say in determining the prices of the cotton they produced. Table 9 is a cross tabulation of whether farmers were able to produce cotton without pre-financing.

Table 9: showing whether or not farmers were able to produce cotton without being pre-financing

		Study Communities								
		Kong	Sakai	Kowie	Tumu	Pulima	Lilixia	Nahadakui	Gbwollu	Total
Can you produce cotton without being pre-financed?	Yes	7	6	7	6	9	9	7	5	56
	No	33	34	33	35	32	32	33	34	266
Total		40	40	40	41	41	41	40	39	322

Field Survey, February 2015

Whereas 17% of respondents indicated their ability to produce cotton without been pre-financed, 83% indicated otherwise. On the basis of these issues, it is clear that, farmers are unable to produce cotton without being pre-financed by a company since in their view the capital outlays for cotton production was very high beyond their reach. This is an indication that, notwithstanding the gains associated with the production of cotton as underscored by sample units of this study, it is constrained by access to finance for production and stands to collapse if no company agrees to support farmers to go in production. Respondents noted that, they were unable to produce without been pre-financed since they did not have access to other forms of credit. The reasons for farmer's lack of access to credit are presented in Table 10.

Table 10: Reasons for Cotton farmer's lack of access to credit

		Responses		
		N	Percent	Percent of Cases
Why cotton farmers lack access to credit	Unwillingness of banks to finance agriculture	58	16.6%	19.5%
	Lack of collateral	244	69.7%	82.2%
	High default rates of farmers	26	7.4%	8.8%
	Other	22	6.3%	7.4%
Total		**350**	**100.0%**	**117.8%**

Field Survey: February, 2015

4.8 Gender Distribution in Cotton Production

The study revealed that as a common practice in most parts of Northern Ghana, there were no restriction on cotton production on the basis of sex however, it was noted that, the males owned most of the factors of production including the labour of their wives and children and were also more stronger hence were capable of working on the land than their female counterparts. One CPA noted that, about five (5) women were independently managing their own cotton farms but added that, they operated only on small scale basis. An interview with two of these women showed that, they also made a lot of gains in the production of cotton even though one of them mentioned that the processes were very daunting.

4.9 Income Distribution among Cotton Farmers

It was noted that the cotton production process is such that farmers needed to spend so much on chemicals such as fertilizers and insecticides and required more hands throughout the production chain. According to the farmers, due to the huge capital outlays and the complexities involved in cotton production, they were incapable of producing cotton without any external pre-financing from cotton companies. The implication of this finding is that, though cotton thrives well in the study communities, farmers are not willing to go into cotton production just as they do for the other food crops which they undertake to cultivate through personal savings and ploughing back of profits.

In terms of incomes generated from cotton production, both the CPAs and farmers interviewed noted that, one Unit (acre) of seed cotton produced could generate 5 bales of

lint cotton. They also indicated that a bale of lint cotton can be sold for GHS 300.00 on average. The implication is that, some farmers are able to make about GHS 1500.00 from the cultivation of cotton which in the view of the farmers will be difficult to obtain from the cultivation of other crops using a similar parcels of land. Income data generated were categorized and presented as shown in table 11.

Table 11: Categorization of Income data generated

		Frequency	Percent
	100-300	141	43.0
	301-600	148	45.1
	601-900	16	4.9
	901-1200	6	1.8
	1201-1500	6	1.8
	1501-1800	1	.3
	Total	318	97.0
	Missing System	**10**	**3.0**
Total		328	100.0

Field Survey, February 2015

Drawing from Table 11, 44.3% and 46.5% earned between GH₵ 100-300 and GH₵ 301-600 respectively the 2011/2012 farming season. For those who earned GH₵ 901-1800, the percentage score is 4.1%. Given this finding, there was the need to find out the relationship between the number of years in cotton production and the amount of money earned. This analysis discovered an interesting scenario. The cross tabulation in Table 12 shows that majority of those who were just within the first five years of cotton production earned between GH₵ 100-300. Though this age group recorded the highest number of participants (116) only one person could earn between GH₵ 901-1,200. It can be observed that age group of 11-20 in cotton production have participants earning in almost all the groups. On the other hand, for those who are into cotton production for 21 years and above, they could not earn much as the majority are within the lower level income groups.

Table 12: Number of Years in Cotton Production and Income levels

Number of years in cotton production and income levels

		Income group						Total
		100-300	**301-600**	**601-900**	**901-1200**	**1201-1500**	**1501-1800**	
Age group in cotton production	1-5	50.4%	29.1%	6.2%	16.7%			36.5%
	6-10	19.9%	31.1%	31.2%				24.8%
	11-15	17.7%	10.1%	12.5%	33.3%	16.7%		14.2%
	16-20	2.8%	12.2%	12.5%	50.0%	66.7%	100.0%	10.1%
	21-25	2.8%	2.7%	12.5%				3.1%
	26-30		8.8%	25.0%		16.7%		5.7%
	31-35	6.4%	6.1%					5.7%
Total		**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Field Survey, February 2015

This scenario can be explained from the economics perspective of economies of scale. Those who just started the cotton business could not attain their maximum production levels explaining why the age 1-5 group could not earn higher incomes. However, as people stay in cotton production for about 11 to 20 years, they are able to attain their maximum production level. On the contrary, production levels begin to drop as participants over stay in the business.

It was also prudent to find out the relationship between the average acreage of cotton cultivated and the amount of money earned. In this regards, there was no strong relationship between the two as shown in Table 13. A critical look at the average acreage of 1-4 revealed that the number of acreage does not have much effect on the amount of money earned. For instance, for the 50 people who claimed they have cultivated 4 acres of land, 70% of them said they earned between GH₵ 100 and GH₵ 300. None of them earned more than GH₵ 300. Similarly, 77.4% of the 31 people who cultivated only one acre of land also earned between GH₵ 100 and GH₵ 300. On the other extreme, 16 people indicated that they cultivated about 10 acres of cotton. However, 93.8% claimed they earned between GH₵ 301 and GH₵ 600 with only one person representing 6.2% earning between GH₵ 1,501 and GH₵ 1,800.

Table 13: Average Acreage of Cotton Cultivated and Income of Respondents

Income Group and Average acreage of cotton cultivated									
		Average acreage of cotton cultivated								Total
		1	2	3	4	5	6	7	10	
Income group	100-300	24	36	21	35	25	0	0	0	141
		77.4%	80.0%	26.6%	70.0%	41.0%	0.0%	0.0%	0.0%	44.5%
	301-600	7	9	58	15	17	26	0	15	147
		22.6%	20.0%	73.4%	30.0%	27.9%	76.5%	0.0%	93.8%	46.4%
	601-900	0	0	0	0	8	7	1	0	16
		0.0%	0.0%	0.0%	0.0%	13.1%	20.6%	100.0%	0.0%	5.0%
	901-1200	0	0	0	0	6	0	0	0	6
		0.0%	0.0%	0.0%	0.0%	9.8%	0.0%	0.0%	0.0%	1.9%
	1201-1500	0	0	0	0	5	1	0	0	6
		0.0%	0.0%	0.0%	0.0%	8.2%	2.9%	0.0%	0.0%	1.9%
	1501-1800	0	0	0	0	0	0	0	1	1
		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.2%	0.3%
Total		31	45	79	50	61	34	1	16	317
		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Field Survey, February 2015

A multiple Regression Analysis was as well used to determine and confirm the effects of independent variables such as: Number of years of producing cotton, Average acreage of cotton cultivated and the Household size on the dependent variable; income of the respondents. Table 14 presents the outputs of the analysis.

Table 14 presents a Multiple Regression with the descriptive statistics showing the means and standard deviations of both the dependent and the independent variables. Whiles the means depicted the extent of convergence of the data sets, the standard deviation depicted how spread apart data sets were from one another. in this respect, whereas incomes of respondents were averaged 398.3 it was 252.2 spread apart in terms of standard deviation.

Table 14: Multiple Regression Analysis of the effects of Number of years of producing cotton, Average acreage of cotton cultivated, and Household size on the income of the respondents**.**

Descriptive Statistics

	Mean	Std. Deviation	N
Average income earned from cotton production	398.3123	252.16858	317
Number of years in cotton production	11.23	9.346	317
Average acreage of cotton cultivated	3.8927	2.04100	317
Household size	8.43	4.945	317

Correlations

		Average income earned from cotton production	Number of years in cotton production	Average acreage of cotton cultivated	Household size
Pearson Correlation	Average income earned from cotton production	1.000	.259	.422	.372
	Number of years in cotton production	.259	1.000	.447	.520
	Average acreage of cotton cultivated	.422	.447	1.000	.348
	Household size	.372	.520	.348	1.000
Sig. (1-tailed)	Average income earned from cotton production	.	.000	.000	.000
	Number of years in cotton production	.000	.	.000	.000
	Average acreage of cotton cultivated	.000	.000	.	.000
	Household size	.000	.000	.000	.
N	Average income earned from cotton production	317	317	317	317
	Number of years in cotton production	317	317	317	317
	Average acreage of cotton cultivated	317	317	317	317
	Household size	317	317	317	317

Variables Entered/Removed[b]

Model	Variables Entered/Removed[b]	Variables Removed	Method
1	household size, average acreage of cotton cultivated, Number of years in cotton production[a]		

a. All requested variables entered.

b. Dependent Variable: average income earned from cotton production

Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	.500[a]	.250	.240	219.84909

a. Predictors: (Constant), level of education attained, household size, average acreage of cotton cultivated, Number of years in cotton production

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5014032.420	4	1253508.105	25.934	.000[a]
	Residual	1.508E7	312	48333.621		
	Total	2.009E7	316			

a. Predictors: (Constant), level of education attained, household size, average acreage of cotton cultivated, Number of years in cotton production
b. Dependent Variable: average income earned from cotton production

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	185.324	38.948		4.758	.000
	Number of years in cotton production	-1.779	1.681	-.066	-1.058	.291
	Average acreage of cotton cultivated	39.853	6.944	.323	5.739	.000
	Household size	14.514	2.978	.285	4.874	.000

a. Dependent Variable: average income earned from cotton production

Comparison of Cotton Production and other Crops Produced in relation to Income

Respondents were also asked to confirm whether cotton production yielded more incomes than other crops. The analysis of their responses are presented in Table 15.

Table 15: Comparison of cotton production and other crops produced in the district in relation to income

		study community								
		Kong	Sakai	Kowie	Tumu	Pulima	Lilixia	Nahadakui	Gbwollu	Total
Cotton production provide more income to people than other crops produced in the district	**TRUE**	40	39	40	41	41	40	39	38	318
	FALSE	1	2	1	0	1	1	2	2	10
Total		**41**	**41**	**41**	**41**	**42**	**41**	**41**	**40**	**328**

Table 15: Comparison of cotton production and other crops produced in the district in relation to income

		study community								
		Kong	Sakai	Kowie	Tumu	Pulima	Lilixia	Nahadakui	Gbwollu	Total
Cotton production provide more income to people than other crops produced in the district	**TRUE**	40	39	40	41	41	40	39	38	318
	FALSE	1	2	1	0	1	1	2	2	10

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.951[a]	7	.890
Likelihood Ratio	3.995	7	.780
Linear-by-Linear Association	.330	1	.566
N of Valid Cases	328		

a. 8 cells (50.0%) have expected count less than 5. The minimum expected count is 1.22.

From Table 15, 97% of the respondents indicated to the affirmative that cotton production was more income related whiles only 3% indicated otherwise. This implies that attempt to redress poverty levels in the study districts could place much emphasis on an improved cotton sector. The chi-square test measures the discrepancy between the observations and what would be expected if the rows and columns were unrelated. The two-sided asymptotic significance of the chi-square statistic is greater than 0.10, so it's safe to say that the differences in the views are due to chance variation, which implies that each of the two alternatives received the same level of consideration.

4.10 Causes of the Poor Performance of the Cotton Industry

Although cotton production has been a major source of employment creation and provision of income to famers over the years, productivity has been poor. This situation is recognized as unfortunate for farmers in the cotton business and their families since a properly managed cotton sector tended to augment the income levels of cotton farmers. The study set out to ascertain why the cotton industry underperformed and revealed a number of factors which in the view of respondents were attributable to the poor performance of the cotton industry in the study district. These factor were further categorized into four key factors: ***attitude of cotton farmers; poor weather conditions; inadequate government support; and inadequate commitment of cotton companies.*** Table 16 shows that 60.4%, 13.1%, 9.5% and 17.1% of respondents noted that, attitude of cotton farmers, poor weather conditions, inadequate government support and inadequate commitment of cotton companies respectively were the causes of the poor production among cotton farmers.

Table 16: Factors That Most Account For Poor Cotton Production

	Frequency	Percent
Attitude of cotton farmers	198	60.4
Poor weather conditions	43	13.1
Inadequate government support	31	9.5
Inadequate commitment of cotton companies	56	17.1
Total	328	100.0

Field Survey, February 2015

Besides the four key factors, the study tested a hypothesis regarding the relationship between the poor cotton performance and respondent's community of affiliation since the poor cotton production is worrying among cotton farmers and all stakeholders. This was deemed necessary to find out whether the cause of the poor cotton production were peculiar to a particular community. This was expressed in the form:

H0: The cause of the poor cotton production is dependent on respondent community of affiliation

H1: The cause of the poor cotton production is not dependent on respondent community of affiliation

In testing the hypothesis, the mean cause of the poor cotton production was determined among the eight study communities. This was to determine whether there will be any differences. Consequently, a One-Way ANOVA test was performed and the results displayed in Table 17 and Table 18.

Descriptive

Table 17: Cause of Poor Cotton Production

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Kong	41	2.68	1.213	.189	2.30	3.07	1	4
Sakai	41	2.88	1.308	.204	2.47	3.29	1	4
Kowie	41	2.22	1.314	.205	1.80	2.63	1	4
Tumu	41	1.63	1.090	.170	1.29	1.98	1	4
Pulima	42	1.45	.803	.124	1.20	1.70	1	4
Lilixia	41	1.34	.794	.124	1.09	1.59	1	4
Nahadakui	41	1.07	.264	.041	.99	1.16	1	2
Gbwollu	40	1.38	.628	.099	1.17	1.58	1	3
Total	**328**	**1.83**	**1.165**	**.064**	**1.71**	**1.96**	**1**	**4**

As shown in Table 17, the mean cause of the poor cotton production is 2.68, 2.88, 2.22, 1.63, 1.45, 1.34, 1.07 and 1.38 for Kong, Sakai, Kowie, Tumu, Pulima, Lilixia, Nahadakui and Gbwollu respectively. A careful observation of the means revealed that the mean causes among the communities are different. However, a One-Way ANOVA test is needed to determine whether the differences between the mean causes are significant. These findings were consistent with the views expressed by Philippe et. al, (2011); MoA and MoTI final report, (2011) that the poor cotton sector performance was associated with ; unfavourable terms and conditions of the cotton producing companies, inadequate credit to cotton farmers, unfavourable government zoning policies among others.

Table 18: One-Way ANOVA test for Mean Differences in Factors that most account for Poor Cotton Production

Analysis of Variance (ANOVA)

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	130.193	7	18.599	18.979	.000
Within Groups	313.585	320	.980		
Total	443.777	327			

Field Survey, February 2015

From a critical look at Table 18, it can be said that there is a significant difference in the mean cause of respondents within the eight communities since a small P-value (<0.05) is obtained. With this, it is clear that, there is no sufficient evidence to uphold the null hypothesis that the cause of the poor cotton production is dependent on respondents' community of affiliation is rejected while the alternative hypothesis that the cause of the poor cotton production does not depend on respondents community of affiliation maintained.

Another area of importance that needed to be explored was whether the zoning and assignment of companies to produce cotton has improved cotton production in the district. The analysis revealed that 3% and 64.6% indicated that they strongly agreed and agreed respectively that the zoning leads to improvements. Contrary to this, 1.5% and 29% held the view that the zoning did not improve cotton production in any way. It should be noted that 1.8% did not respond to this question. Clearly, 67.6% had a positive thinking about the zoning policy while 30.5% thought it did not help in any way. See Table 19.

Table 19: Effects of Zoning on Cotton Production

	Frequency	Percent
Strongly agree	10	3.0
Agree	212	64.6
strongly disagree	5	1.5
Disagree	95	29.0
Total	322	98.2
Missing System	**6**	**1.8**
Total	328	100.0

Field Survey, February 2015

For those who said the zoning did not help to improve cotton production, several reasons have been given. They include restriction of farmers to produce under one company no matter the conditions, lack of motivation to produce under certain companies, compelling of farmers to accept any price for their products, low quality inputs by some companies and delay in the supply of production inputs. See the multiple respond table for the details in Table 20.

Table 20: Why Respondents Disagree with Zoning

		Responses		Percent of Cases
		N	Percent	
Reason for disagreeing with zoning	Farmers are restricted to produce with one company regardless of the terms	123	27.2%	59.4%
	No motivation exist to cultivate under some companies	57	12.6%	27.5%
	Farmers are compelled to accept any price for the produce	73	16.1%	35.3%
	Companies provide low quality input	46	10.2%	22.2%
	Companies delay in supplying production inputs	154	34.0%	74.4%
	Total	**453**	**100.0%**	**218.8%**

Field Survey, February 2015

4.11 Analysis of the Cotton Value Chain

Cotton production is associated with a set of interconnected chains/stages from which employment opportunities are created and based on which Local Economic Development issues comes to the fore. The International Labour Organization (2001) recognizes such relationships as participatory development processes that encourage partnership arrangements between the private and public stakeholders of a defined territory such, enabling the joint design and implementation of a common development strategy and making use of the local resources and competitive advantage within the large global context, with the final objective of creating decent jobs and stimulating economic activity. This viewpoint of the ILO (2001) was assessed through participatory discussions with Cotton Production Assistants and some cotton farmers. The various stages of the cotton production process was documented and presented in a graph as shown in Figure 7. Indicated on the graph is the average number of people employed at the various stages identified.

Figure 7: Estimated Number of People at the various stages of the production process. (*Field Survey, February, 2015)*

The study disclosed that, at each of the above stages, an average of about five (5) people per 1 unit/acre of a cotton field are required and engaged to get the job done. This implies once again that, since these hired labour earns some income the trickle down train is often set in motion since fees and bills are paid and building projects of cotton farmers have been completed through such proceeds. It should be emphasized that these value chain activities are consistent with the postulates of the conceptual framework of this study which posited that employment generation is a function local economic development through the rippling effects embedded in incomes and revenues.

4.12 Land Acquisition and Access

Farm land in Sissala East and West districts is owned through ancestral bequeath. Land is therefore owned and controlled by families and clans and allocated to individuals or households on a usufructuary basis. Contrary to the provisions of the national land policy published (June, 1999) which provides a framework for free and ease of access to land by all Ghanaians, access and control to land is restricted to the male sex with the view that women often cannot pacify the earth goddess and often marries out hence cannot make any

ownership claims on land (Aasoglenang et.al. 2013). It was also revealed through an FGD that strangers can secure land for the cultivation of any crop provided such a person exhibited good character traits. However, an informal interview with a non-native revealed that since he was not a native, it was not possible for him to obtain the right type and size of farmland for crop production.

Findings on the local level arrange for the acquisition of land for cotton production from natives reveals that, Farm land in the study areas are not formally hired like what exist in some parts of the country but that the agreement leave repayment at the discretion of the non-native farmers. Land is thus not sold in these communities outright for the cotton production. The challenge with this system of arrangement as noted by a non-native cotton farmer was that,

> If you farm and what is given to the landlord is not appreciated, the next farming season he will tell you that he needs his land since cotton production might have helped improve soil fertility and might tend to attract many more farmers ready to pay more. The difficulty also lie in how to determine an acceptable compensation.

Table 22: Views of Respondents on the Problems they encounter in relation to land acquisition and access.

		Study Community								Total	%
		Kong	Sakai	Kowie	Tumu	Pulima	Lilixia	Nahadakui	Gbwollu		
Do you face any problems with land acquisition for cotton cultivation?	Yes	1	1	1	1	2	3	0	1	10	3
	No	40	40	40	40	40	38	41	39	318	97
Total		41	41	41	41	42	41	41	40	328	100

Field survey, February, 2015

From Table 22 ninety-seven (97) per cent of respondents admitted that they farm on their own or family land and as such did not face any problems in relation to land access and usage. A total of three (3) per cent of the respondents however indicated that they either hired their farm lands or engaged in other forms of informal arrangements with landlords. It was necessary to determine whether those who said there were some challenges in land acquisition were peculiar to one or some of the study communities. Nevertheless, the cross tabulation in Table 23 did show that there is no relationship between land acquisition

problems and any of the study communities. It can be observed that the trend of "Yes" and "No" regarding whether or not there is a problem in land acquisition is similar throughout all the study communities.

Table 23: Land Acquisition Problems and Study Communities

		study community								Total
		Kong	Sakai	Kowie	Tumu	Pulima	Lilixia	Nahadakui	Gbwollu	
Do you face any problems with land acquisition for cotton cultivation?	YES	1	1	1	1	2	3	0	1	10
		2.4%	2.4%	2.4%	2.4%	4.8%	7.3%	0.0%	2.5%	3.0%
	NO	40	40	40	40	40	38	41	39	318
		97.6%	97.6%	97.6%	97.6%	95.2%	92.7%	100.0%	97.5%	97.0 %
Total		41	41	41	41	42	41	41	40	328
		100.0 %	100.0 %	100.0 %	100.0 %	100.0%	100.0%	100.0%	100.0%	100.0 %

Field survey, February, 2015

In finding out whether there were community level strategies to regulate land access for cotton production, 46.3% held the view that there were some strategies while 53.7% maintained that there were no any strategies. For those who said there were some strategies, some of the strategies were identified as follows; 8.5%, 3.8% and 55.3% mentioned shared cropping, given out for free and seek permission form land owners as some of the strategies respectively while 20.5% and 12.1% mentioned fulfilling traditional obligations and others respectively. The implication of this is that, issues of litigation and strives are absent which is a good potential for economic development.

The dominant sources of labour for cotton production in the study area are family members, hired labour and group support. This is shown in Table 24 which is a multiple response frequency table.

Table 24: Source of labour

		Responses		Percent of Cases
		N	Percent	
Source of labour	Family members	255	39.5%	77.7%
	Hired labour	196	30.3%	59.8%
	Group support	187	28.9%	57.0%
	Other	8	1.2%	2.4%
Total		646	100.0%	197.0%

Field survey, February, 2015

From Table 24, whereas 39.5% of all responses pointed to the use of family members as sources of labour, 30.3% indicated that hired labour was used. This means that even if the family members did not received any money for selling their labour, the people who are hired are paid wages which has implications for the local economy through both direct and indirect ways.

4.13 Raw Cotton Processing

One major seed cotton processor ginnery can be found in one of the study districts (Sissala East). The ginnery processed seed cotton into lint for onward dispatch to textile companies in Akosombo among others. During the processing, seed cotton is weighed before been offloaded into the warehouse for processing. Seed cotton put into the machine first separate the seed from the lint. Whiles the seeds are collected into bags, the lint is pressed into bales. A cotton famer association leader has lamented during the data collection that, they had always agitated that the farmers be made to share in the profits accruing from the sale of the seeds. Interestingly according to the farmer, these same seeds are sold back to the farmers if they take delivery of the required production units and still needs more seed.

Currently, the cotton ginnery is not been used due to the fold up of the cotton production cotton company in the district. Cotton processing has thus come to a halt since the very few quantity of cotton produced by the in-coming company had to be transported to Bolgatanga to be ginned.

The decreased production level in the view of farmers and the other stakeholders was due to the late arrival of the new company and the general dilemma which characterized the capacity of the cereal producing company to add on cotton production whose production requires special attention. Meanwhile local processing cotton of has implication for LED since study communities admitted that, processing of the seed cotton into seeds and lint does not only change the value of the raw cotton into semi-finished state, but that, it also provided employment opportunities for the community people. The implication of this is that, incomes obtained by the employees have ripple effects on the local economic activities since most respondent confirmed that they were able to secure some properties from the proceeds of cotton production.

4.14 Effects of Cotton Production on other Food Crops

The study again was interested in ascertaining how cotton production affected the production of other food crops in the study communities since asserted that the application of chemicals on cotton farms might have reduced the quality of soils for other crop production. However, respondents have proved otherwise. The FGDs with the farmers pointed to the fact that, cotton production increased soils fertility for the growth of other food crops such as maize, soya beans, groundnut among others as the cotton stalk served as sources of humus. Their view supported that of an individual respondent who noted that,

> When I have a parcel of land that is not fertile, I rather grow cotton to boosts its fertility.

Some respondents also noted that in cases where cotton fields even lose their fertility, they often adopt crop rotation and shifting cultivation to address such nutrient deficits.

On their part, 1.5% of respondent them held the view that cotton production reduces soil fertility for other crops growth. Contrary to this view, 94.8% maintained that the production of cotton increased soil fertility for other crops growth.

From the multiple response analysis, it was the view of 50.5% of respondents that cotton production has improved output levels of other crops due to increase in soil fertility. On the other hand, 26.4% and 23.1% responses showed that cotton production has reduced farm sized for other crops and has caused the neglect in the production of other crops respectively. The views of respondents were aggregated and presented in the pie Chart in figure 8.

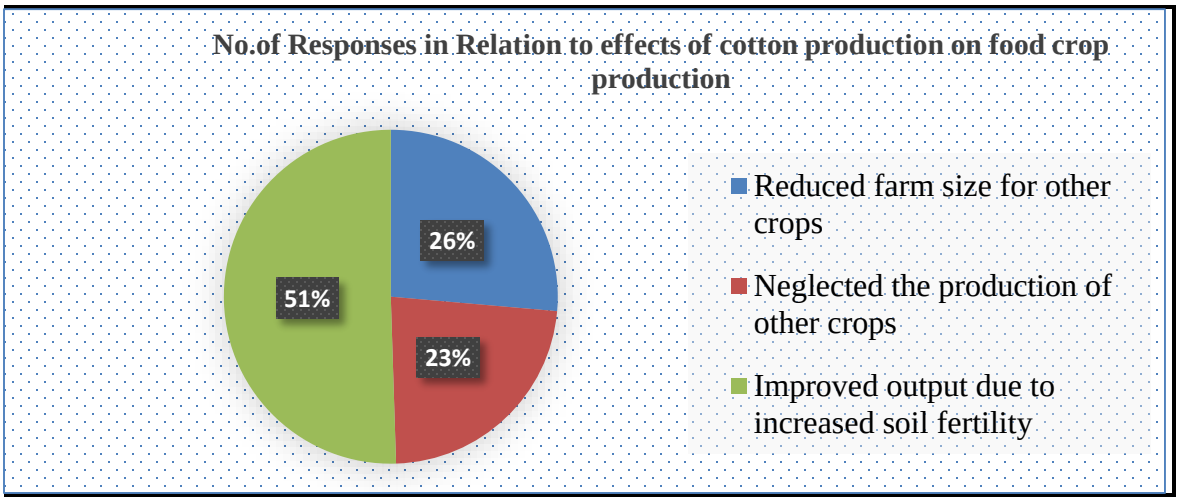


Figure 8: Number of responses in relation to the effects of cotton production on food crop

The revelation from the pie chart is in sharp contrast with the conclusions of Aktaret.al (2009) that cotton production causes destruction and saps soil nutrients excessively thereby influencing the reuse of such parcels of lands for the cultivations of other food crops. This might explain why almost all the cotton farmers also involved in the production of other crops.

4.15 Environmental Effects of Cotton Production

Respondents for the study, mainly farmers said they were aware of the environmental effects of cotton production in the districts. To them, cotton production served as nutrient fixing cash crop which in their view was cultivated on fields to boosts soil fertility for the production of other crops. One respondent has noted in the Sissala east that:

> If I want to get a bumper harvest of maize, I first cultivate cotton on the land then the following year I use that land to cultivate maize so if anyone say that cotton production saps soil nutrients, then the person is not a good farmer.

Notwithstanding these views, some cotton farmers decried the rate of deforestation associated with cotton production. this view was corroborated by the DADU when the Chief extension officer indicated that, more trees are cut down when preparing parcels of lands are been prepared for cotton production. The DADU noted that, this practice exposes the entire area to some future environmental hazards if tree planting in not made integral in the cotton production chain. On the issue of chemical poisoning from the use of cotton producing chemicals for other crops, the DADU intimated that, since the chemical

composition of the cotton chemical was different from that of food crop, it was possible that such powerful chemical residues could remain in the soil to kill some key soil microbes needed to keep soils together when fields are continuously used for cotton production without any form of land management practices. The DADUs see the environmental impact of cotton production as negative because its cultivation leads to destruction of trees whiles the cotton farmers see the environmental impact as positive since cotton production leads to improved soil fertility through the decay of cotton stalks among others. The views of the 328 respondent cotton farmers on the environmental impacts of cotton production pointed to this fact. According to literature, cotton is one of the most chemical intensive cash crop (Kole et al., 2001, Waskom, 1994) which presents a lot of hazards to farmers and other soil users. This study however noted contrary views from the experiences of cotton farmers in the study communities.

4.16 Access to Agricultural Extension Services

The study revealed that cotton production was a specialized area which required more dedicated and committed field agents for the timely dissemination of inputs. Respondents noted that, though not a routine practice, some forms of extension services are given to them by the cotton companies and environment protection agency through the environmental Units on the safe handling, application and disposal of used chemical containers. Others are compiled in Table 25.

Table 25: Training Programmes for cotton Farmers in the Study Areas

Type of Training
Bush fire prevention
Weeding
Use of improved variety
Chemical weed control
Correct spacing in cotton
Land preparation
Fertilizer application
Use of agrochemicals
Post-harvest technology
Climatic changes and its impacts
Topping
Pest and disease control

Field survey, February, 2015

4.17 Cotton Industry and Local Economic Development

A key measure to help poor people to realize their potentials and reduce their poverty requires that entrepreneurs set up businesses and provide job opportunities at places where poor people can work (World Bank, 2003). The study revealed that the cotton industry through its value chains has impacted on the lives of the people in various ways at the local level. The study identified that the cotton production and its related activities provided employment for over 4000 people in the study areas. This study examined the cotton value chains to assess how the industry's ripple effects has implications for local economic development. In terms of employment, cotton production in the study districts provided both direct and indirect employment opportunities to people along the value chains. This was manifested in the responses obtained during data collection when respondents acknowledged the huge labour requirements associated with the processes. These in the view of respondents takes the form of food vendors at factory sites, drivers carting seed cotton, lint cotton and among others.

In terms of infrastructural development, the study revealed that cotton production has contributed in increasing the housing stock in the study districts. Several respondent farmers noted that, they completed their housing projects from the proceeds of cotton production; an indication that, cotton production is has trickled down towards development. In terms of increasing assets base, farmer respondents noted that, proceeds from the cultivation of cotton have made it possible for them to obtain a number of assets such as Motor bicycle, bicycles tricycles among others.

4.18 Revenues and Foreign Exchange to the Government

The Assemblies receive revenue from the cotton companies in the forms of the taxes paid through the revenue collectors in the various communities. This was highlighted by one of the assistant directors contacted in compiling this thesis. data on how much revenues was generated from cotton in the districts were difficult to come by since the company that supervised the production was no more in existence coupled with the very low production of cotton for the 2013/2014 farming. The revelations from the directors regarding the fact that, revenue are generated from cotton production through taxes means that in deprived

districts like Sissala East and West, cotton production is one of the major sources of revenue to the Assemblies. Cotton production assistant indicated that, lint cotton transported to Tema are exported. This served as source of foreign exchange for the country. They were however unable to note in monetary terms how much of foreign exchange was brought in through the exportation of lint cotton., it was revealed that the ginnery located in Tumu was underutilized presenting a great potential for the districts to profit from cotton production.

4.19 Effects of Cotton Production on the health of the Cotton Farmers in the Sissala East and West Districts

Good health is essential for the proper functioning of every economy. Literature reviewed for this study showed that, cotton production was highly chemical intensive and as such impacted so much on the health of the farmers and the economy in general. The study in a bid to find out how cotton production impacted on the health of cotton farmers in the study communities. The Chief Agriculture Extension officers of the study districts noted that as cotton producing chemicals are diverted and used for other crops, there is the likelihood of contamination of the other crops since the chemical composition of cotton chemicals are supposed to be higher that meant for other food crops. Respondents also noted that they were aware that cotton chemicals were among the most hazardous yet they did not use any protective wears when handling them which tend to expose them to chemical poisoning. The local coping strategies of farmers who get complications from chemical poisoning include; shea butter induced vomiting and drinking of fresh cow milk to induce vomiting. In the view of the chief agricultural officer at the Sissala East district, the diversion of chemicals meant for cotton for other food crops constitute contamination of the food crops since the chemical composition for cotton chemicals are always higher. To corroborate these views regarding chemical usage and health units of the study districts were contacted. A senior nurse at one of the centres confirmed that, several chemical related complications have been recorded over the years through attempted suicides and complications through applications in the fields.

Cotton production has had a debilitating health effects and can cause threat to human lives if it is not undertaken with care EJF. (2005) fortunately the study revealed that, most cotton farmers are aware of the dangers associated with the activity. When asked whether they were aware of the hazards associated with cotton farming, only 2.7% said they were not aware while 97.3% did say they were aware of the dangers.

Table 25: Knowledge of Health Hazards Associated with Cotton Production

		Study community								Total
		Kong	Sakai	Kowie	Tumu	Pulima	Lilixia	Nahadakui	Gbwollu	
Knowledge of health hazards associated with cotton production	Unaware	2	1	2	1	0	0	2	1	9
	Aware	39	40	39	40	42	41	39	39	319
Total		41	41	41	41	42	41	41	40	328

Field survey, February, 2015

Having known respondent farmers were aware of the dangers associated with cotton production, one would have thought that care would be taken in order not to suffer any chemical poisoning. However, the statistics show that 24.4% of respondents have experienced some forms of chemical poisoning within the past two years as shown in Table 26.

Table 26: Cotton Chemical Poisoning of Respondent for the last 2-3 farming seasons

	Frequency	Percent
Yes	80	24.4
No	248	75.6
Total	328	100.0

Field survey, February, 2015

In fact, 16 (4.9%) of respondents confirmed that they have recorded deaths as a results of cotton chemical usage. See Table 27. It is obvious that among the 16 deaths that have been recorded, children constitute 50% while women made up of 31.3%. The number of men who became victims made up of 18.8%. Findings regarding the incidents of ill-health

associated with cotton production is also consistent with the view of (EJF, 2007) when it was established that in a single, month observation period, cotton farmers experienced separate incidents of ill health in which 39% were associated with mild poisoning, 38% with moderate poisoning, and 6% with severe poisoning.

Table 27: Record of Deaths from Cotton chemical usage

		Frequency	Percent
	YES	16	4.9
	NO	306	93.3
	Total	322	98.2
Missing	System	6	1.8
	Total	328	100.0

Field survey, February, 2015

In order to know some local mechanisms of controlling pest, 76.5% said they use pounded sees and leaves of neem trees 1.5%, applied ashes while 4.9% used other forms of pest control. However, 17.1% did not respond to this question. Respondents indicated that in recent times, these local mechanisms have not been effective compelling them to rely mainly on the inorganic hazard chemicals as pest control measures.The most common health problems suspected to be associated with cotton chemical use from the perspective of both farmers and the health officers included skin rashes, headaches, general body weakness, difficulty in breathing and dizziness. These were in tandem with the findings of the Northern Presbyterian Agricultural Services and Partners, (2012) report on Ghana's pesticide crisis. In terms of local first aid strategies and mechanisms to avoid chemical poisoning complications, the responses are presented in the cross tabulation output table with respect to the study communities below.

Table 28: Local coping /first aid Measures for chemical poisoning and Study Communities

		Study Community								Total	%
		Kong	Sakai	Kowie	Tumu	Pulima	Lilixia	Nahadakui	Gbwollu		
knowledge of local coping /first aid mechanisms for chemical poisoning	Drink fresh cow milk	31	31	27	30	31	34	27	30	241	47.
	Take in Paracetamol	7	7	5	6	5	7	6	5	48	9.3
	Take in other traditional tonics	8	7	7	9	6	11	5	7	60	11.7
	Move straight to local clinics										
	Drink shea butter	6	6	8	7	6	4	5	7	49	9.5
	Drink highly concentrated salt solution	17	12	16	15	7	8	17	13	105	20.5
		2	1	1	1	1	2	2	2	9	1.7
										512	**100**

Field survey, February, 2015

Table 28 indicates that 47.0% of all responses noted that fresh cow milk was an effective local first aid whiles 1.7% used concentrated salt solution.

Routes of Chemical Poisoning

The study collected data on poisoning incidents by interviewing farm families in the study districts. The responses were categorized in relation to the study communities in the cross tabulation output table 29 below.

		Study Community								Total	
		Kong	Sakai	Kowie	Tumu	Pulima	Lilixia	Nahadakui	Gbwollu		%
routes of cotton pesticide induced complications	Swallowing cotton	9	6	6	5	1	3	5	6	41	5.7
	Application in the field	21	20	22	22	19	18	25	18	165	23.0
	Contamination of food	10	10	9	9	6	6	11	8	69	9.6
	Re-use of empty containers	16	16	17	16	13	12	16	17	123	17.2
	Unsafe storage and inhalation from rooms	8	6	5	5	2	4	6	7	43	6.0
	Children playing with empty containers	14	11	12	12	8	9	13	11	90	12.6

	Confusing pesticides for other products	8	4	5	5	-	2	4	4	33	4.6
	Use of chemicals to kill lice in the hair	10	6	6	5	-	2	5	8	42	5.9
	Use of chemicals to treat/store farm produce	16	14	10	15	10	15	13	14	107	14.9
										716	100

Table 29: Routes of Chemical Poisoning

Field survey, February, 2015

Summary of data from the 716 multiple response analysis show that poisoning is more common during application of the chemicals in the fields as 23% of all responses pointed to this fact, this might be attributed to the fact that respondents indicated their lack of protective clothing needed for safe chemical handling. 17.2% selected reuse of chemical container whiles 14.9% of responses related to the use of chemicals to treat/store other farm produce. These findings are consistent with a similar study documented in Ethiopia, from statistics provided by the Amhara Regional Health Bureau for 2001 which concluded that pesticide-related ill health can seriously affect farm families and rural communities through unsafe storage in kitchens and bedrooms, dangerous treatment of grains and beans and use of empty insecticide containers.

4.20 Constraints of Cotton Production in Study Districts

The study revealed that the prospects of the cotton industry in the study areas are brighter and could be consolidated if stakeholders along the entire production chain are able to surmount the following constraints. These constraints were corroborated from all sources contacted for this study except cotton producing companies which were unavailable as at the time of conducting this research:

Supply of unprocessed and incompatible variety of cotton seeds to farmers by companies was identified as one of the constraint to cotton production. This in the view of respondents led to poor growth of cotton and poor yields since seedlings from such seeds were easily attacked by cotton diseases. Cotton Production Assistants suggested the adoption of BT cotton to help address this constraint.

The vagaries of the Weather in terms of the rainfall and weather conditions also constrained cotton production in the study communities. In the Sissala West for instance, farmers noted that, the erratic weather conditions often led to late preparation of land and the commencement of the entire production cycle which at times lead to poor yields.

Additionally, framers added that, apart from the pre-financing of cotton production by companies whose terms are often nut favourable, other financial institutions are unwilling to finance cotton production and even other agricultural due to the high risks associated with cotton production which often resulted into High default rates. Another constraint in

the view of study respondents is the late supply of chemical inputs. On this note, famers noted that, sometimes the inputs are supplied at the time when the disease causing pest has caused the devastation already. Stakeholder responded in the affirmative that, some farmers often use of cotton inputs for other crops whiles others sold cotton produced to other companies. This practice in the view of respondents constrained the industry since the cotton companies are unable to meet their expected production levels. The collapse of Olam Ghana limited is even partly ascribed to this practice. The study revealed that, the road infrastructure was inadequate to link most cotton producing communities to the ginnery at Tumu. According to the respondents the absence of adequate feeder roads were necessary to aid the carting of seed cotton to Tumu.

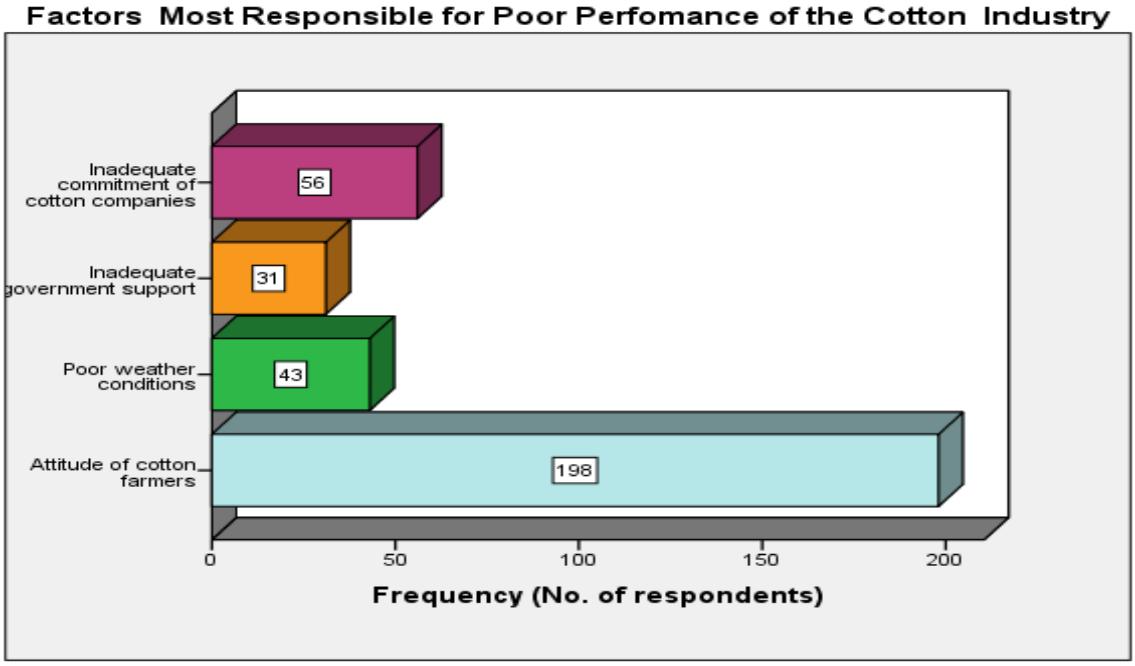


Figure 9: factors Most Responsible for Poor Performance of the cotton industry

4.21 The Prospects of cotton Industry in the Study Area

Despite the challenges of the cotton industry, there are potentials for the industry in the study Districts. Firstly, the land available in the district as noted by the DADUs, DAs and NGOs was vast and highly suited for the cultivation of cotton.

The study also noted that, the agricultural extension officers and the DADUs in general were prepared to partner cotton companies to support the industry. Such collaboration

holds a lot of prospects for the industry since the DADUs are composed of technical officers whose expertise could be brought on board to propel and sustain growth.

Governments interest at reviving the cotton sector as a poverty reduction issue also constitute a great prospect for the industry. It is only important that, appropriate monitoring and evaluation mechanisms are instituted to fully align the activities of cotton companies with the local level development strategies which at the time of this research was not. Masara Narsiki which is the company taking over the production of cotton in the Sissala area has a wealth of experience in managing such production arrangements.

4.22 Government Policies and Cotton Sector: and Government Budget

A budget is an itemized summary of expected income and expenditure of a country, company, among others over a specified period, usually within a financial year.

It is a valuable planning and control tool which helps in prioritizing spending and managing resources to avoid wasteful expenditure. Within the context of governance and policy, a budget of a government is a summary or plan of the intended revenues and expenditures of that government consisting of revenue receipts of government and the expenditure to be met from these revenues. In a bid to assess GoG's commitment and support for the growth of the cotton sector in terms of budgetary allocations, this study reviewed budget statements of the country over a ten year period. This is assessment was deemed appropriate in order to ascertain whether the failure of most of the cotton sector policies and reforms of the country over the past decades can be associated with inadequate financial resources allocations for the prosecution of the formulated policies and plans since the lifeblood for the execution of policies, plans and reform recommendations was the availability and conscious allocation of financial resources.

Table 30: Assessment of budgetary commitment for cotton development in Ghana

Budget Year	*Comments*
2014	• No budgetary allocation for the sector development like cocoa and other cash crops, no indication of efforts to enhance the sector *(GoG Budget, p. 101)*
2013	• Indication of intent to promote tree and industrial crops production including cotton, efforts to enhance the sector was indicated in budget, no budgetary allocations were made in this budget. *(GoG Budget, p. 96, p. 100)*
2012	• No budgetary allocation to the sector, no mention has been made in the budget for the sector revitalization.
2011	• Budget indicates funding support from the Export Development and Investment Fund and fertilizer subsidy for cotton sector growth *(GoG Budget, p. 85).*
2010	• The high potential of cotton production and difficulties confronting the sector in Ghana acknowledged. No budgetary allocation made for the sector growth in this budget. *(GoG Budget, p. 76)*
2009	• Mention has been made of plans to expand areas under cultivation for cotton, cashew and mango in the northern ecological zones; budget also indicates plans to re-activate commercial agriculture – in rice, mango and cotton farming in the three Northern regions *(GoG Budget, p. 73, p. 293)*. • No conscious financial allocations made in this budget.
2008	• No budgetary allocation to the sector, no mention has been made in the budget for the sector revitalization.
2007	• Indicated the support of farmers in the North with land preparation and seeds for the establishment of 10,000 hectares of cotton in 2006 but with no budgetary allocation for 2007 *(GoG Budget, p. 94).*
2006	• No budgetary allocation to the sector, no mention has been made in the budget for the sector revitalization.
2005	• Plans to add cotton, cashew, sugar and sorghum to the existing President's Special Initiatives *(GoG Budget,* p. 256)

Source: Authors' compilation, November, 2014

From the table above, unlike the cocoa, coffee and other cash crops, government budgets over the ten year period have failed to make conscious financial commitment for the development of the cotton sector notwithstanding the reforms to revamp the sector.

4.23 Chapter Summary

The analyses of the performance of cotton production in relation to LED revealed that cotton Industry provides employment opportunity for over 4,000 people in the study area. A total of 348 respondents were targeted. This sample was biased towards the men since farming in the study communities was regarded as a male preserve. The stage at which the cotton chain ends at the study community's ginnery was the processing of the seed cotton

into baled lint cotton for export to other markets. Processing. The analyses in the chapter revealed mixed points of view relating to the effects of cotton production of soil fertility. Also depict that the people's impression about the environmental impacts of cotton production is that it is not harmful even though a number of the stakeholders think cotton cultivation leads to the destruction of large trees and as a result affects the tree stock of the districts. Again, the data presented shows that access to farm land is not a problem in the study area. However, there is inadequate capital for farmers to do independent production to have a say in determining prices. The key findings identified have been highlighted in the next chapter.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the summary of findings evolved from the analysis in the preceding chapter and draws some conclusions on the basis of the analysis but in line with the objective guiding the study. The chapter also and puts forward some recommendations for Policy and Planning purposes.

5.2 SUMMARY OF FINDINGS

The key findings of this study are categorized under the specific objectives that were set to help address the research questions of the study.

5.2.1 The Role of Cotton Production in Economic Development of Sissala East and West Districts

- Findings of the study show that, the entire Sissala land has a huge potential for the cultivation of cotton even without the use of fertilizer. On this note a cotton production assistant confirmed that before Olam Ghana folded up there was a pilot study involving two different fields. The result from the pilot was that, the filed that did not use fertilizer produced as much seed cotton as the ones that utilized the fertilizer.
- It is also clear that, cotton production creates more employment opportunities for the people than any other crop produced in the district due to the numerous value chain processes associated with cotton production. In the view of respondents of this study, the high employment potential of seed cotton production further translate into improved income levels of cotton farmers. This assertion was confirmed when the study noted that about 60-70% of assets (Bicycles, motor bicycles, cars, buildings among others) of respondent cotton farmers were acquired through the use of proceeds from cotton production and that due to the complex nature of cotton production, an average of six (6) labourers including family members are engaged on 2-3 units of cotton fields.

- One key finding is that, cotton production has often led to the reduction of farm size for other crops and in some cases total neglect of the production of other food crops.
- The study again discovered that farmer attitudes towards cotton production in terms of input diversion remains a challenge to efforts aimed at revamping the cotton sector in the district.

5.2.2 Government's cotton sector policy options that could stimulate LED in the Sissala East and West Districts

The thesis sought to assess how government cotton sector policies could stimulate Economic Development in the study districts. On this note the study found that government involvement in the cotton production even after the cotton sector reforms of 2010 was nothing to write home about.

- The Assistant Sissala East District Director and Chief Agriculture Officer have both noted that neither the District Assembly nor the DADU was actively involved in the production of cotton. This was attributed to the fact that since the cotton companies were engaged directly from the national level, they often paid their allegiance to the national offices without recourse to the local level. The DADU for instance indicated that the cotton companies even ignored some key suggestions they had made in the past to help the cotton sector to thrive.

- Another sterling finding from the study is that there was no legislation to regulate and sanction non-compliance with laid down cotton policies by companies and farmers alike. The presence of such a legislation in the view of the Assistant Sissala East District Director will tend to encourage fair seed cotton prices and ensure that farmers do not divert seed cotton to companies that did not support their production but are interested in buying the output.

- The study found that governments' cotton reforms and zoning which placed cotton production rights in the control of Olam Ghana brought some rejuvenation to the cotton sector however Olam Ghana limited which was in charge of North western Zone has folded up and transferred their rights to Masara Narsiki whose principal

activity is the production of maize, soya beans and other grains. However, most farmers as well as the other respondents to this study intimated that, it was not proper for Masara to take up the cotton production rights in addition to the production of grains and cereals since the cotton industry in their view was a complex one which required special attention.

- Again, government's commitment in terms of budgetary and other resource allocations for cotton development as was done for cocoa and other cash crops was inadequate if not non-existent.

5.2.3 Effects of Cotton Production on the health of the Cotton Farmers in the Sissala East and West Districts

- Cotton producing chemicals are diverted and used for other crops, there is thus the likelihood of contamination of those other crops since the chemical composition of cotton chemicals are supposed to be higher that meant for other food crops.

- Respondents used hazardous cotton chemicals yet they did not use any protective wears. The local coping strategies of farmers include; shea butter induced vomiting and drinking of fresh cow milk to induce vomiting.

- cotton chemical usage has resulted in a number of poisoning cases through attempted suicides and complications from applications

5.2.4 Effects of Cotton Production on Soil Quality and Food Crop Production in the study Communities.

The study also sought to assess the effects cotton production on soil quality and how such effects affected food crop production in the districts from the lived experiences of cotton farmers, cotton companies, the Agriculture development Units, the Environmental Protection Agency among others.

- The data analysis show that, cotton production increases soil fertility for the growth of other food crops since the cotton stalk and the leaves often serve to improve soil fertility. Also, crop rotation and shifting cultivation were the major methods farmers used in addressing soil nutrient deficits in the communities.

- Deforestation which is associated with cotton production in the study districts militates against the fallowing of parcels of lands since the vegetative cover necessary for Ecosystem regeneration is affected.
- Cotton production led to a reduction of farm size and at times a total abandonment of the production of other food crops.

5.3 CONCLUSIONS

Based on the analysis, the study draws the following conclusions:

- Cotton production in the study districts has bright future prospects and has implication for Local Economic Development since cotton farmers confirmed the various ways cotton production has impacted their lives through the value chains.
- Again, cotton production has a negative effects on the health of cotton farmers since protective clothing are not used in handling cotton chemicals. This also has implications for local economic development since farmers who got complications, abandoned their economic activities and sought health care reducing productive hours.
- Also, cotton production does improve soil fertility through the decay of cotton stalks which goes contrary to what was observed elsewhere however, cotton production causes a lot of deforestation which could affect sustainable environmental management efforts in the districts if afforestation is not made an integral part of the efforts to revive and sustain the cotton industry.

5.4 RECOMMENDATIONS

The following recommendations are put forward to inform policy and planning:

- Cotton farmer associations, cotton producing companies, and the government through the Districts Assemblies should harness the needed synergy to salvage the rather promising cotton industry in the district through input subsidies, improved peer monitoring on the usage of inputs supplied to the farmers, and the institution of schemes to reward hardworking farmers, Cotton Production Assistants and farmers group who are able to repay in full their indebtedness to the companies.

- Active involvolvment of the DADUs to take advantage of their technical expertise in terms of their knowledge on crop and animal extension. They are also more familiar with the local conditions and are thus better placed to support the sustainable growth and development of the cotton industry.
- Cotton producing companies should institute and strive to sustain an award scheme that will debar farmers from diverting cotton inputs for the production of other crops. This could be done through regular monitoring of the application of the inputs (fertilizer and the other chemicals) if they are issued to farmers.
- The DADUs, DAs and cotton producing companies should streamline the Farmer Group Association production system so that through a motivated membership, they are made to understand the benefits they stand to gain from self-financing of cotton production as it is done for the other food crops.
- This study also recommends that, whiles efforts are been instituted to revamp and reap the gains in the cotton sector, similar effort should be harnessed to complement the reforms with the requisite funds at both local and national level otherwise; cotton production in the country will forever remain low.

5.5 Recommendation for Future Research

The study recommends that future studies on cotton production should concern itself with soil analysis to ascertain soil PH levels and the seepage level of chemicals into the soil through the use of hazardous chemical residues. Such analysis will tend to reveal statistical facts regarding the effects of cotton chemical on soil fertility. Knowledge of the chemical elements associated with cotton production can better position policy makers to advice on the right mix of practices that can help in improving soil nutrients, improve human health and increased output levels of both cotton and non-cotton crops.

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Appendices: Questionnaires and interview schedules

Interview Guide for DADUs
(District extension/veterinary officer, Director Etc.)

I am Francis Xavier Naab, a student at KNUST, Kumasi. I am conducting this study as part of the requirements for the award of a degree in development policy and Planning. Your participation in this interview will enable me provide accurate and fair view about cotton development and LED in you district and communities. You have the right to choose not to be part of this interview; however your participation will be greatly appreciated as I commit myself to treating any information so provided as confidential and used only for academic purposes.

1. Name of interviewee/ Portfolio
2. Name of assembly
3. How is the cotton sector faring in the district?
4. Can you tell me whether there are any companies or organizations partnering the DADU to support the cotton sector?
5. Does the district have a district special programme or project to support the cotton sector?
6. If yes what are the challenges to executing it?
7. If no is it not necessary to have something like that for the development of cotton?
8. Olam Ghana folded up in producing cotton in the district. Can you kindly assign any reasons for this?
9. How can cotton production engender local economic development in the district?
10. Is there future for cotton in the district?
11. What is not been done right in the district and the country in general about cotton production in terms of administration, policy and local level management?
12. What are cotton productions' effects on health of the farmers?
13. What are cotton productions' effects on health of the soil /environment?
14. Does the district have any programme to regulate the use of hazardous chemicals?
15. Which of the following routes serves as sources of cotton pesticide induced complications? **Confirm all that apply.**
    - ✓ attempted suicide by the swallowing of cotton chemicals
    - ✓ application in the field
    - ✓ Contamination of food and re-use of empty containers for food and drink
    - ✓ unsafe storage and inhalation in rooms
    - ✓ children playing with pesticides
    - ✓ confusing pesticides for other products
    - ✓ inappropriate use for treating lice in hair or ticks
    - ✓ dangerous use of chemical for treatment of grains and other farm products
    - ✓ Others……
16. Have you offered any training on the following to cotton farmers in the district?
    - ✓ Alternatives to inorganic chemical usage, Sustainable chemical use
    - ✓ Raise awareness among farmers as to the dangers of pesticide use

- ✓ Work with farmers to develop community monitoring of the use and impacts of pesticides
- ✓ List of permitted chemicals

17. What other programmes and projects does the Unit have in place to support the cotton sector?
18. Do you have any relationship with the cotton producing companies in the district? How?
19. Do the cotton companies consult the Unit on the kinds of chemicals and farm practices they introduce to farmers in the district?
20. Do they observe you recommendations?
21. How can cotton engender local economic development?
22. How often do the extension service provide training to farmers on the safe use of pesticides and produce a public
23. Any other issue you may want to tell me about cotton production in the district
24. Does cotton production affect food crop production? How does this happen?

***Confirm whether the following statements are true or false*.**

25. Cotton production provide more employment to people than other crops produced in the district. 1=True 2=false
26. Cotton production provide more income to farmers than other crops produced in the district. 1=True 2=false
27. Cotton production uses more local resources/inputs than other crops in the district. 1=True 2=false
28. There is much stakeholder involvement in cotton production than other crops. 1=True 2=false

Interview Guide for District Assembly
(DCE, DCD, DPO)

1. Name/ portfolio of interviewee
2. Name of assembly
3. How is the cotton sector faring in the district?
4. What are some of the programmes and projects of the district to support the cotton sector?
5. Does the district receive any central government funding to support cotton production?
6. Does the district have any plans to revive cotton production?
7. Can you tell me whether there are any companies or organizations partnering the assembly to support the cotton sector?
8. Does the district have a LED policy?
9. If yes what are the challenges to executing it?
10. If no why is there no LED policy?
11. Olam Ghana folded up in producing cotton in the district. Can you kindly assign any reasons for this?
12. How can cotton production engender local economic development in the district?
13. Is there future for cotton in the district?

14. What is not been done right in the district and the country in general about cotton?
15. Do cotton production have any effect on health of the farmers? explain
16. Do cotton production have any effect on health/fertility of the soil /environment
17. Does the district have any programme to regulate the use of hazardous chemicals?
18. Does the district have any programme to regulate the sale of hazardous chemicals?
19. What role do you think the cotton Industry is expected to play in LED?
20. What benefits do farmers in the district derive from cotton production?
21. Does cotton Industry contribute to the development of the locality? How?
22. Any other issue you may want to tell me about cotton production in the district

***Confirm whether the following statements are true or false*.**

23. 24) Cotton production provide more employment to people than other crops produced in the district. 1=True 2=false
24. 25) Cotton production provide more income to farmers than other crops produced in the district. 1=True 2=false
25. 26) Cotton production uses more local resources/inputs than other crops in the district. 1=True 2=false
26. 27) There is much stakeholder involvement in cotton production than other crops. 1=True 2=false

Interview Guide for District Health Units (Nurses, In-charges, Medical Officer)

I am Francis Xavier Naab, a student at KNUST, Kumasi. I am conducting this study as part of the requirements for the award of a degree in development policy and Planning. Your participation in this interview will enable me provide accurate and fair view about cotton development and LED in you district and communities. You have the right to choose not to be part of this interview; however your participation will be greatly appreciated as I commit myself to treating any information so provided as confidential and used only for academic purposes.

29. Name of interviewee/title/portfolio
30. Name of health center
31. What are the top ten reported cases that have been recorded at this centre? [Burning eyes, headaches, skin irritation after spraying, stomach problems after inhaling chemicals, been hospitalized with pesticide-induced illness, miscarriage]
32. Can you tell me which of them is associated with the use of cotton chemicals
33. What is the frequency of reported cotton related cases?

    High
    Very high
    Moderately high
    Low
    Very low
34. Which categories of people are mostly affected by cotton pesticide induced illnesses? *(Please tick one in each category)*

    Men [ ]

Women	[ ]
Literate	[ ]
Illiterate	[ ]
Adult	[ ]
Children	[ ]

35. For the past 1-2 years, have you recorded any cotton chemical related deaths? Yes/No (Please Record data according to sex and children if available)
    Adult: male…….female……..children: male……female……..
36. Which of the following routes serves as sources of cotton pesticide induced complications? Confirm all that apply.
    - ✓ attempted suicide by the swallowing of cotton chemicals
    - ✓ application in the field
    - ✓ Contamination of food and re-use of empty containers for food and drink
    - ✓ unsafe storage and inhalation in rooms
    - ✓ children playing with pesticides
    - ✓ confusing pesticides for other products
    - ✓ inappropriate use for treating lice in hair or ticks
    - ✓ dangerous use of chemical for treatment of grains and other farm products
37. How often do the Ghana Health Service establish programmes to routinely conduct tests on a sample of farmers to test for pesticide residues
38. Does this centre have the capacity of diagnosing and treating pesticide poisonings?
39. Does the centre have any programmes to support, create awareness of cotton farmer of the hazards associated with cotton chemicals?
40. *Confirm whether the following statements are true or false*.
41. 24) Cotton production provide more employment to people than other crops produced in the district. 1=True 2=false
42. 25) Cotton production provide more income to farmers than other crops produced in the district. 1=True 2=false
43. 26) Cotton production uses more local resources/inputs than other crops in the district. 1=True 2=false
44. 27) There is much stakeholder involvement in cotton production than other crops. 1=True 2=false

QUESTIONNAIRE FOR COTTON FARMERS

Please, complete this questionnaire by filling the spaces provided and tick (√) where necessary

[1] Background Characteristics of Respondents (please circle all that apply)

No.	Question	Coding Categories
	Age	**[ ]**……1
	Sex	Male……...1 Female……..…….....2

	Marital status	Single……..1 Married……..…..2 Divorced/separated…….……3 Widowed……..…..4 Others ……..…….99
	Ethnicity	Sissala…….…..…1 Waala…….....…2 Dagaaba……3 Other (specify)…….……4
	Religion	Islamic…….…….....1 Christianity…….……..2 Traditional…….……...3 Other…….……99
1.6	Level of education attained	No formal education……...1 Primary……..……..…2 JHS……..…3 SSS/SHS……..…..…4 Tertiary……..……5 Other ……..……..99
1.7	Source of livelihood (Tick all that apply)	Cotton farming…….…….…….1 Food crop farming……..……2 Trading…….……..3 Formal employment…….……..4 Other…….……..99
1.8	What is your household size?	**[ ]**
1.9	How long have you been farming cotton?	**[ ]**
1.10	What is the total acreage of your cotton farm?	**[ ]**
	On average how much do you make from cotton production for the period?	**[GH₵]**
	What assets/debt have you bought/paid from such monies?	Bicycle……..1 Motor bicycle……...…….2 Tricycle…….3 Tractor…….…….4 Car…….5 Paid school fees……..…..6 Others……99

[2] Land Acquisition and source of labour

No.	Question	Coding Categories
2.1	Do you face any problems in acquiring land for cotton production?	Yes ……..……..1 No……..……..2
2.1.1	If yes, what are the problems?	Litigation……..1 Exorbitant charge from landlords……2 Others…….99
2.3	Are there any community level strategies to regulate land access for cotton production in the district?	Yes……..…1 No……..…….2
	If yes, what are these strategies?	
2.4	What are your sources of labour	Family members…….……..…1 Hiring of labourers…….……..….2 Group support…….……..….3 Others ……99
2.5	How many labourers did you hire for the last farming season?	
2.6	Is your cotton farm near to sources of water?	Yes ……1 No……2

[3] Access to Credit and forms of support from cotton producing companies

No.	Question	Coding Categories
3.1	Do you have access to credit facilities?	Yes ……..…… No……..….
3.1.1	If Yes, from which of the following sources?	Government Loan Schemes…….…..…….. Commercial Banks……..…….…..……. NGOs…….……. Microfinance Institutions……..…..…… Borrow from family/friends…….…… Others ……..
3.1.2	If No in question 3.1 above, why do you not have access to credit facilities?	Unwillingness of banks to finance Agricultural……..… Lack of collateral……. High default rates……..……..… Others .……..……..
3.2	Do you receive any assistance from the cotton company?	Yes ……..……. No……..……..……..

3.2.1	If Yes in question 3.2 which are the forms of assistance (circle all that apply)	Ploughing of farmland(s)…….... Received seeds……..……..…..…….. Received inputs……..……..……... Free consultation and training……...… Extension services……..... Other .…….……..
	Can you produce cotton without being pre-financed?	Yes …… No……..……..…
	If yes in the above question how?	Personal savings…….. Bank loans……..……. Microfinance……..…….. Others……...
	If no, why?	The cost involved is high…… It is very complex and requires external support……. Others……
3.3	Indicate whether you satisfied with the terms and conditions of the cotton companies?	Highly Satisfied……..…..……...….. Satisfied……..……..…… Dissatisfied……..……..…… Highly dissatisfied……..…..…..…….
3.4	The zoning and assignment of cotton production to companies has brought order into cotton production contributed to improved cotton development in the district?	Strongly agree…….... Agree…….….... Strongly disagree……..…..…… Disagree…….……..…...
3.4.1	If disagree or strongly disagree in 3.4, what are the challenges of the current zoning policy? ***(please tick all that apply)***	Farmers restricted to farm with particular companies…. No motivation to cultivate under some companies……. Compelled to accept any price for produce…… …..……... Companies provided low quality of inputs …….……. Delay in supplying production inputs…….
3.5	Cotton prices and production has been attractive since the zoning started.	Strongly agree…….…….... Agree…….……...…... Strongly disagree…….…… Disagree…….……..……...
3.6	How many companies or organizations support cotton	1…….… 2……... 3……

	production in the district?	
	What do you think are the reasons for Olam's fold-up in producing cotton ***(Confirm all that apply)***	High default rates…… Low cotton prices……. Diversion pf inputs for other crops……..…. Diversion of cotton to other companies……... Weather……. Lack of government support…….. Other…….
3.7	How do you finance the other crops you produce?	Personal savings……...… Bank loans…… Microfinance…… Others…… .
3.8	What reasons account for farmers' poor cotton yield over the years? ***(Confirm all that apply)***	Weather……..……. Late land preparation ……..……. Late inputs supply …… Use of inputs for other crops ……..……... Sale of cotton produced to other companies ……..... Others……
3.9	How can cotton companies improve cotton production in the district?	
3.10	How can cotton farmers improve cotton product in the	
3.11	How can cotton government improve cotton production in the district?	

4.1	Are you aware that cotton cultivation has a great hazard on your health	Not Aware …….…….... Aware ……..…….…… Very Aware…….……....
4.2	For the past 1-2 years have you been sick, hospitalized or stayed in bed for a number of days after spraying or coming into contact with cotton chemicals?	Yes……..……..… No……..…
4.3	Which of the following coping/mitigating measures do you apply to lessen some of the effects poisoning symptoms before seeking medical care?***(Please Tick all that apply)***	Drink of tinned milk …….…… Take in Paracetamol…… Take in traditional tonics…… Move straight local clinics……..…… Other…….
4.4	For the past 1-2 years, has any of your	Yes…….……. No…….

	relative/family members died from cotton chemical induced complications?	Man..…….1 woman ……..2 child……..……
4.5	Which of the following routes serves as sources of cotton pesticide induced complications? ***(Please confirm all that apply)***	Swallowing cotton chemicals: Attempted suicide…..……..... Application in the field……..……..…… Contamination of food……..…….. Re-use of empty containers…….……..……. Unsafe storage and inhalation in rooms……..….... Children playing with pesticides……..…… Confusing pesticides for other products……..…….. Use of chemical for treating lice in hair ……... Use of chemical for treatment farm products……
4.6	Which of the following chemicals do you apply on your cotton? (Show container if available)	Endosulfan (organochlorine)……..…… Dimethoate (organophosphate)…….…….…… Cypermethrin (synthetic pyrethroid)……..... Chlorpyrifos (organophosphate)……... Fenitrothion (organophosphate)…….…….. Malathion (organophosphate)…… Glyphosate (phosphonic acid)……..….... Profenofos (organophosphate)…….…… Deltamethrin (synthetic pyrethroid)…… Other……..…99
4.7	Are you aware that some chemical types have been banned for use in Ghana?	Aware, mention some……..……..……..…..… Not aware……..……... Don't know……
4.8	Have you received any training or campaign on any of the following by; EPA, Health Units, DA, DADUs and cotton company	Alternatives to inorganic chemical usage?..... Sustainable chemical use?..... The hazards and safe handling of chemicals…… Health impacts of chemical use…… List of permitted chemicals ……
4.9	Which of the following local practices do you think can be used to fight cotton pest?	Pounded seeds and leaves of neem tree…… Ashes…… Planting other crops…… Crop rotation…… Others……

5.0 Cotton production, soil fertility and food crop production

No.	Question	Coding Categories
5.1	Cotton production affects soil fertility for growth of other food crop in which of the following ways?	Reduces soil fertility for crop growth……..……1 Increase soil fertility for crop growth……2 Do not have any effect for crop growth……..3 Other explain……..……99

5.1.1	If Yes, Cotton production affects soil fertility for growth of other crops, what local practices can/have been used to improve fertility of cotton producing fields?	Shifting cultivation…..……..…..……..1 Crop rotation……..2 Mixed cropping…….....……..3 Organic farming practices…….4 Others …….....99
5.1.2	How has cotton production affected the production level of the other food crops? ***(Select all that apply)***	Reduced farm size for the other crops……..….1 Neglected the production of other crops……..….2 Improved output due to increased soil fertility…….3 Others .……..……...99

Confirm whether the following statements are true or false.

10) Cotton production provide more employment to people than other crops produced in the district **1=True 2=false**

11) Cotton production provide more income to farmers than other crops produced in the district **1=True 2=false**

12) Cotton production uses more local resources/inputs than other crops in the district **1=True 2=false**

13) there is much stakeholder involvement in cotton production than other crops **1=True 2=false**

Researcher at Sofitex Cotton processing company to observe how cotton is handled through the value chains.

Data collection at Cotton Company, Tumu