

# Agriculture in Sustainable Rural Development

Effects of the Growth and Poverty Reduction Strategy II (GPRS II) on  
Livelihoods and Coping Strategies of Smallholder Farming Households:  
Context of the Ejisu-Juaben Municipality in the Ashanti Region of Ghana.

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*This Master's Thesis is carried out as a part of the education at the  
University of Agder and is therefore approved as a part of this  
education. However, this does not imply that the University answers  
for the methods that are used or the conclusions that are drawn.*



## Abstract

The Poverty Reduction Strategy (PRS) approach championed by the World Bank and the International Monetary Fund lies at the centre of development assistance, debt relief, and development planning in many developing countries, including Ghana. Ghana has implemented a PRS (Ghana Poverty Reduction Strategy I, 2003-2005) and a second generation of PRS (Growth and Poverty Reduction Strategy II, 2006-2009) had just passed its implementation phase in 2009. This study focuses on the second PRS – that is the Growth and Poverty Reduction Strategy II (GPRS II). The study also selectively reviews major literature on the role of agriculture in sustainable rural development and offers critical perspectives on realising the potential multiplier effects of sustainable agriculture in sustainable rural development promotion.

In Ghana, agriculture continues to be one of the dominant sectors of the economy, in terms of its contributions to output, employment, revenue generation, and foreign exchange earnings, and yet many of the poorest in Ghana, like in many developing countries, are farmers usually practising smallholder rain-fed systems which are highly vulnerable to shocks. Meanwhile, the specific nature of thematic areas of the GPRS II such as improving agricultural productivity and its effects on livelihoods of poor and vulnerable groups such as food crop farmers has received little academic attention. This study responds to this gap by offering a theoretically informed empirical research directed towards the better understanding of the effects that the agricultural productivity sub-sector of the GPRS II has had on smallholder farmers' ability to develop sustainable livelihoods. Often, variability in climatic conditions interacts with adverse socio-economic conditions such as disadvantageous terms of trade and poor agricultural infrastructure to undermine agricultural productivity and by extension, farmers' livelihoods (Sagoe, 2006).

The study adopted an analycentric approach to policy analysis of the GPRS II focusing on the micro-scale of typically farming communities in the Ejisu-Juaben municipality of the Ashanti region of Ghana. Livelihood analysis conceptual and methodological frameworks were also employed to assess the livelihood resilience building capabilities of local smallholder farmers due to effects of the GPRS II. It was revealed that although many of the interventions in the municipality's action plan seemed to conform to the most critical empirical needs of local farmers for resilient livelihood development, the GPRS II has not duly benefited the greater majority of farmers in the municipality, and thus been slow in its poverty reduction processes. A livelihood resilience analysis for instance revealed that although a few smallholder farmers were able to develop productive capital assets and to build *viable* and *sustainable* livelihoods through the activities of the GPRS II, a greater majority of smallholder farmers in the municipality have not been able to adequately develop capital assets for more productivity, hence maintaining *extremely poor* and *vulnerable* livelihoods.

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All errors remain my own.

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## **Abbreviations and Acronyms**

GPRS I	Ghana Poverty Reduction Strategy I
GPRS II	Growth and Poverty Reduction Strategy II
PRS	Poverty Reduction Strategy
LAST	Livelihood Asset Status Tracking
MoFA	Ministry of Food and Agriculture
GIDA	Ghana Irrigation Development Authority
MDGs	Millennium Development Goals
NEAP	New Partnership for African Development
APRM	African Peer Review Mechanism
CEDAW	Convention on the Elimination of all forms of Discrimination against Women
NDPC	National Development Planning Commission
DA	District Assembly
MDAs	Ministries, Departments, and Agencies
CARL	Countries with Abundant Rural Labour
CWA	(Washington) Consensus on Agriculture
ECOWAS	Economic Community of West African States
IPCC	Intergovernmental Panel on Climate Change
DFID	(UK) Department for International Development
AEA	Agricultural Extension Agents
FASDEP	Food and Agriculture Sector Development Policy
NCCSAP	Netherlands Climate Change Studies Assistance Programme
MSD	Meteorological Services Department
GCM	General Circulation Models
SCM	Simple Climate Models
COCOBOD	Ghana Cocoa Board

# CHAPTER 1

## ***1.1 Introduction***

The Poverty Reduction Strategy (PRS) approach championed by the World Bank and the International Monetary Fund lies at the centre of development assistance, debt relief, and development planning in many developing countries, including Ghana. International endorsement of the approach as critical for more effective poverty reduction and better development aid is reflected in the Monetary Consensus and the Rome Declaration (Driscoll, 2004). Ghana has implemented a PRS (Ghana Poverty Reduction Strategy I, 2003-2005) and a second generation of PRS (Growth and Poverty Reduction Strategy II, 2006-2009) had just passed its implementation phase in 2009. While there is clearly an element of continuity in the PRSs, the second differs from the first in a number of ways. For instance, while the first phase of the government's strategy emphasized programmes and projects to reduce poverty, the second phase focuses on the implementation of activities that induce growth and have the potential to support the creation of wealth.

This study will focus on the second PRS – that is the Growth and Poverty Reduction Strategy II (GPRS II). Specifically, it will examine the effects of the GPRS II on the livelihoods and coping strategies of smallholder farming households in the Ejisu-Juaben municipality of the Ashanti Region of Ghana. Policies that support the livelihoods of smallholder farmers are crucial in efforts to tackle poverty and hunger, especially when they are designed to combine different sectors of public intervention. As shall be explained further in the study, the livelihoods options available to people, in for example rural farming communities, are critical for the people's coping strategies to adversaries in economic living and working conditions. This topic is selected against the backdrop that the primary sector (agriculture, mining and quarrying, forestry) continues to dominate the Ghanaian economy, in terms of its contributions to output, employment, revenue generation, and foreign exchange earnings. Agriculture is the main economic activity and, currently, accounts for about 51% of the GDP and about 54% of the labour force (Ghana Statistical Service, 2010).

Generally, the social structure remains predominantly traditional, rural, and informal. Even in the aftermath of two PRS's, the general assessment of the overall outcomes of the policy have produced mixed results, especially in interventions relating to thematic areas of production and gainful employment in agriculture, with the intent to reduce poverty. The challenges are numerous. The study also focuses on coping strategies to vulnerabilities smallholder farmers face in their day-to-day livelihoods activities. The main vulnerability is

climatic variability and its effects on their livelihoods, as these farmers mainly practice rain-fed agricultural systems. It is often commented, both in academic and non-academic circles, in Ghana that natural weather patterns are becoming increasingly erratic and unpredictable due to natural and human-induced factors so that weather patterns are now different from those that have been experienced in the past and adapted to. Often, variability in climatic conditions interacts with adverse socio-economic conditions such as disadvantageous terms of trade and poor agricultural infrastructure to undermine agricultural productivity and by extension, farmers' livelihoods (Sagoe, 2006).

The research shall be divided into (5) five chapters. Chapter 1 will outline the proposal for the study. Chapter 2 presents a review of relevant literature and the theoretical framework on which the study's analysis is based. Chapter 3 discuss in detail the methodology for this study and give justifications for the outlined methodology. Chapter 4 will touch mainly on presentation of empirical findings and data analysis. Finally, chapter 5 will discuss lessons learnt in the form of a summary and suggest recommendations where necessary. In the paragraphs that will follow, these issues shall be presented.

### ***1.2 Proposition, Research Objective and Research Questions***

The main proposition of the study is that the GPRS II has been able to assist farmers to effectively develop essential stock of capital assets (human, physical, financial, natural, and social) necessary for poor smallholder farming households to obtain adequate sustainable livelihoods. I accept the proposition if the analysis proves this, or reject the proposition if the analysis proves otherwise. This is against the backdrop of an empirically proven positive relationship between an individual's stock of these capital assets and ability to meet his or her resilient livelihood needs.

The general objective of the study is to assess to which degree the GPRS II have had an impact on smallholder farmers' ability to develop livelihoods which are sustainable and less vulnerable to shocks in local environmental conditions.

Specifically, the study will aim to;

- Assess the general working and environmental conditions under which rural food crop farmers in rural farming communities in the municipality work.

- Assess local farmers' level of participation in the design of specific custom-made district level plans under the Accelerated Private Sector-Led Growth thematic area of the GPRS II.
- Assess how effective the programmes and interventions of the GPRS II for improving productivity and competitiveness of poor food crop farmers and also their coping capacity to (un)foreseen changes in working conditions.
- To suggest possible recommendations to enhance the policy's effectiveness to improving agricultural productivity and reducing poverty among poor rural food crop farmers in study area.

To achieve these objectives, bearing in mind that each district or municipal or metropolitan area in Ghana has its own customised plans of action on the national GPRS II programme, the study will investigate the following specific research questions;

- What are the main items of the municipal formal action plan, and to what extent does the municipal agricultural authority follow the plan?
- To which degree are the farmers knowledgeable and operating according to the specific projects and interventions of the municipal action plan for enhancing agricultural productivity?
- What is the level of the smallholder farmers' participation in programme activities under the improving agricultural productivity sub-section of the GPRS II?
- What are the environmental and working conditions of the farmers in the municipality? Have the farmers experienced any change(s) in these conditions, and if yes, how do they cope with these changes?
- What is the overall performance of the GPRS II to improving agricultural productivity and farmers' livelihoods in the study area?

### ***1.3 Empirical Presentation of Study Area***

The proposed study site is the Ejisu-Juaben Municipality of the Ashanti Region of Ghana. The municipality is made of twenty five (25) towns and villages, out of which 10 could be classified as mainly farming communities. These communities will be the focus sites of this study. Socio-economic and demographic data of the municipality is sourced mainly from Ghanadistricts.com – the official page for information on local government structures in Ghana. Figures 1.1 and 1.2 show the study area in national context and in detail respectively.

Figure 1.1 Study Area in National (Ghana) Context

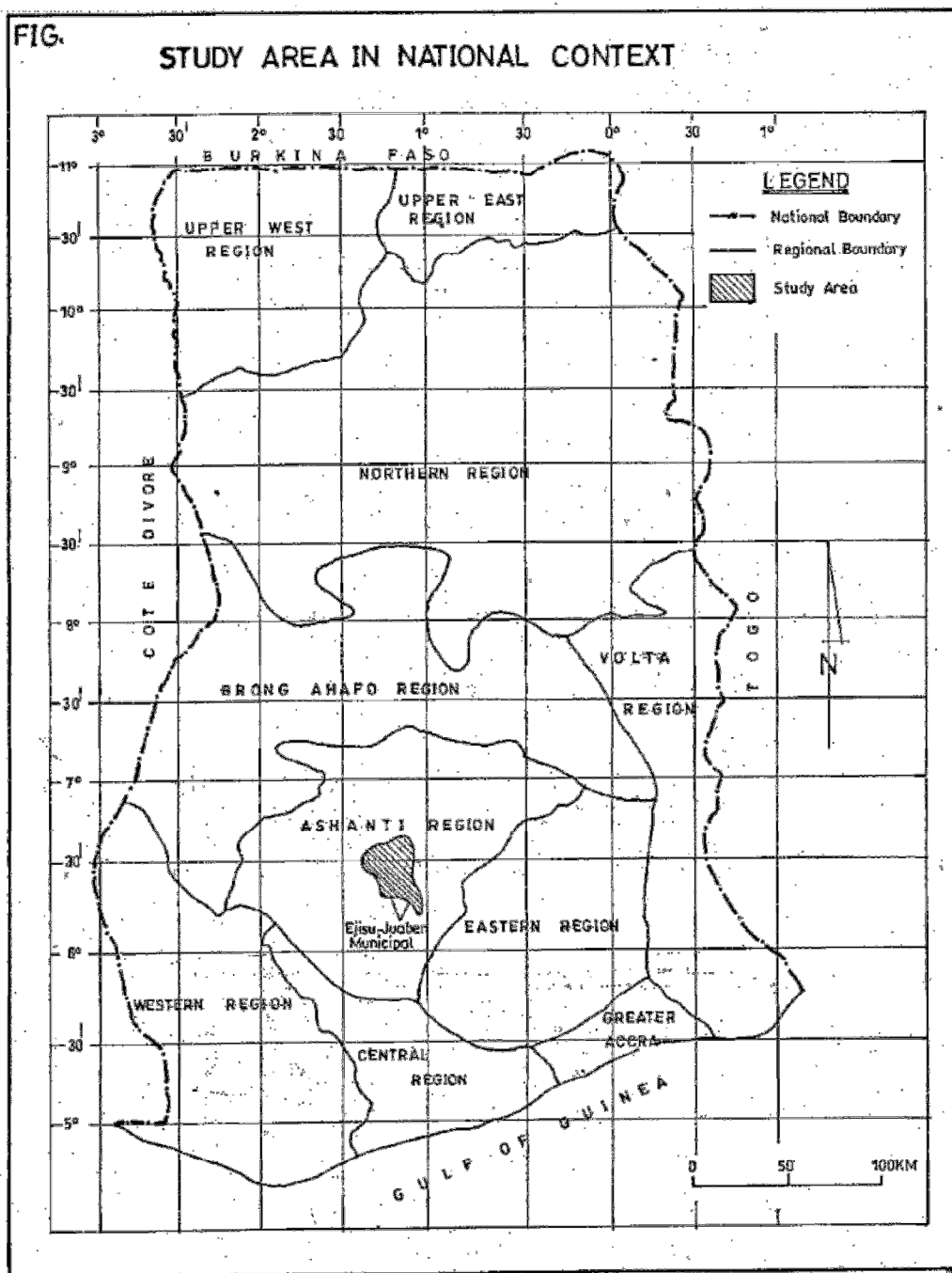
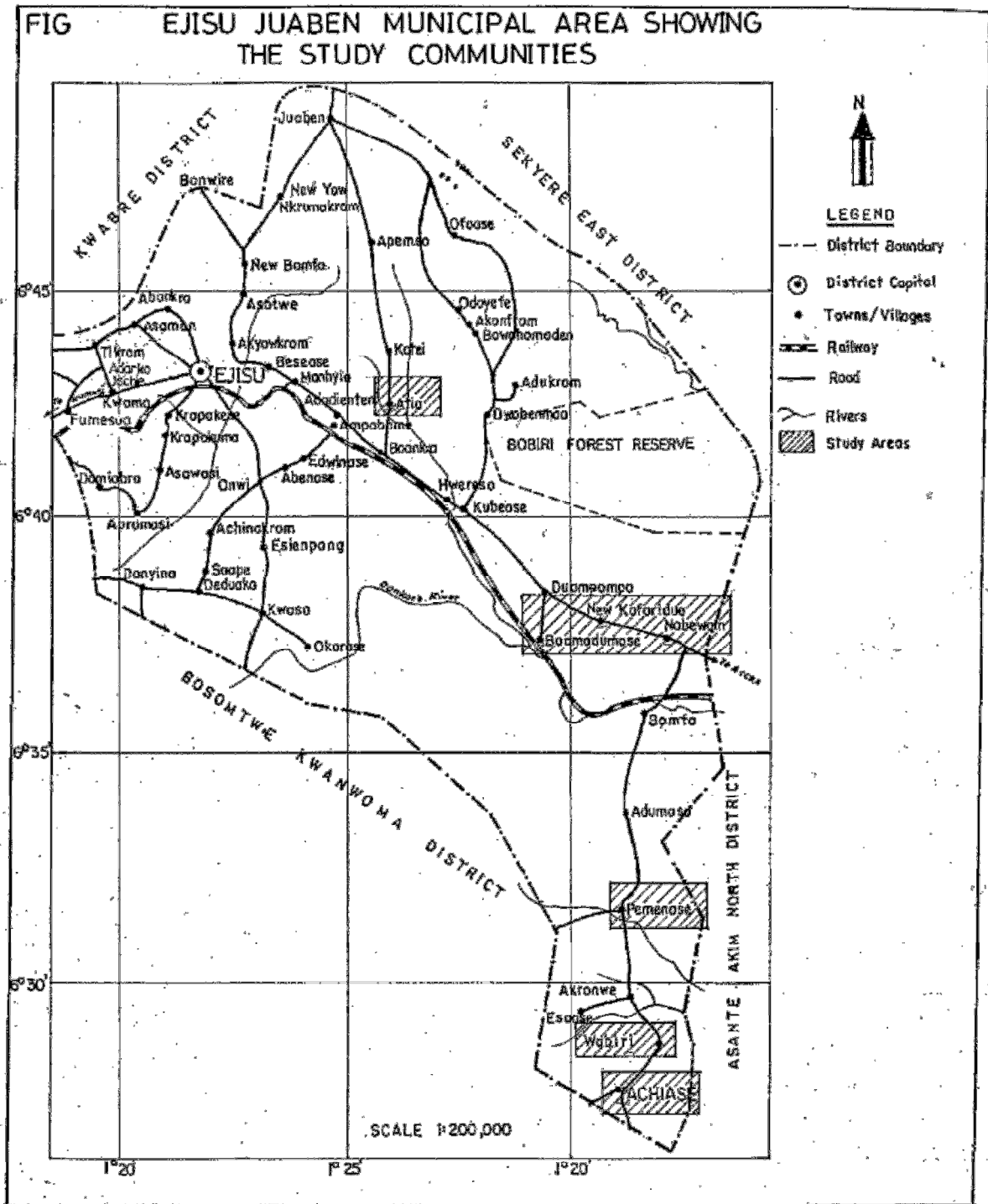


Figure 1.2 Ejisu-Juaben Municipal Area Showing the Study Communities



### 1.3.1 Location and Size

The Ejisu-Juabeng municipality is located in the Ashanti Region of Ghana, known for its rich cultural heritage and tourist attractions notably the “kente” (traditional woven cloth) weaving

industry. The municipality stretches over an area of 637.2 km<sup>2</sup> constituting 10% of the entire Ashanti Region, with Ejisu as its capital. It lies within Latitude 1°15'N and 1°45'N and Longitude 6°15'W and 7°00'W.

### **1.3.2 Climate and Vegetation**

Climate and vegetation as is the case for most of the middle belt in Ghana, the municipality experiences tropical rainfall – that is bi-modal rainfall pattern and wet semi-equatorial climate. It is characterised by double maxima rainfall lasting from March to July and again from September and normally ends in the latter part of November. The mean annual rainfall is 1200mm. Temperatures range between 20°C in August and 32°C in March. The fair distribution of temperature and rainfall patterns enhances the cultivation of many food and cash crops throughout the municipality.

Some ecologically unfriendly farming practises, stone quarrying activities, and illegal chain saw operations have resulted in the natural vegetation cover being degraded into secondary forest. Massive deforestation has also occurred in some areas, resulting in the forest giving way gradually to savannah conditions. The deforestation situation in the Ejisu-Juaben district is not very different from the national situation, where reports indicate a decline of Ghana's tropical high forest from 8.2 million ha at the beginning of the 20<sup>th</sup> century to only 1.7 million ha (Friends of the Earth International, 1999), with an estimated annual forest cover change of 120,000 hectares between 1990 and 2000 (FAO, 2001). The soils in the district are also fairly good for cultivation of staple food stuff and other cash crops.

### **1.3.3 Economy**

Although other sectors such as manufacturing, services, and commerce contribute substantially to the economy of the municipality, agriculture stands to be the mainstay of the municipality by virtue of its percentage employment, which is 55.6% of the total employed labour force. Agriculture in the district is divided into two main major types – crop farming and animal husbandry. Some also practise mixed farming.

Majority of the farmers (94.1%) are into crop farming with the remaining 5.9% being mixed farming (Ministry of Local Government and Rural Development, 2006). This is partly as a result of a generally favourable weather and arable land conditions. Most of the food crops are grown mainly to be sold for income and the rest to be consumed by the family. The major crops can be put into 2 categories – food crops (including maize, plantain, cassava, cocoyam, vegetables) and tree crops (including cocoa and oil palm).



### ***1.4 Smallholder agricultural Production in Ghana and in the Ejisu-Juaben Municipality***

Agriculture in Ghana is characterised by a large smallholder sector, and a very small large commercial sector. Predominantly, agriculture is practised on smallholder, family-operated farms using rudimentary technology to produce about 80% of Ghana's total agricultural output (MoFA, 2007). It is also estimated that about 2.74 million households operate a farm or keep livestock, and about 90% of farm holdings are less than 2 hectares in size (MoFA, 2007). Larger scale farms and plantations produce mainly oil palm, rubber and coconut and to a lesser extent, maize, rice and pineapples. Agricultural production is generally dependent on rainfall, although it is reported that an estimated 6,000 farm enterprises nation-wide were using some means of irrigation in 1999.

According to the Ghanaian Ministry of Food and Agriculture (MoFA), in 2002, the total area under formal irrigation was around 11,000 hectares whereas the potential area – including inland valleys – that could be developed for irrigation is estimated at 500,000 ha. From this data, it is discernible that Ghana currently uses just about 2.2% of its irrigation potential. The Ghana Irrigation Development Authority (GIDA) in 2000 identified 32,000 hectares of under-developed inland valleys throughout the country that could benefit from moisture improvement technologies for food production. Ghana produces 51% of its cereal needs, 60% of fish requirements, 50% of meat and less than 30% of the raw materials needed for agro-based industries (MoFA, 2007). This suggests poor agricultural development level, with the nation having to import the remainder of agricultural produce for domestic and industrial consumption.

Production of roots, tubers and vegetables such as tomatoes and onions, the most widely used staple food crops, is rather erratic and vacillates between scarcity, sufficiency and glut, depending on the vagaries of the weather. This means that food security and resilience to vulnerabilities of smallholder farmers is ill-assured. In spite of this gloomy picture, agriculture continues to contribute the largest share to the Gross Domestic Product (GDP), even though the share of the sector in national output declined from 44% in 1990 to 37% in 2005 (MOFA, 2007). Table 1.1 below shows general rainfall records and changes in pattern over the time frame of the implementation of the GPRS II.

**Table 1.1 Regional Rainfall Data in mm (2006 - 2009)**

<b>Region</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>30-YEAR AV.</b>	<b>% change 2008/2009</b>
Western	1350	1678	1518	1385	1558	-8.8
Central	1462	1330	1361	1195	1252	-12.2
Greater Accra	689	863	914	805	788	-11.9
Eastern	1410	1328	1454	1211	1340	-16.7
Volta	1093	1195	1436	1212	1180	-15.6
Ashanti	1384	1542	1412	1380	1345	-2.3
Brong Ahafo	1310	1312	1366	1148	1244	-16.0
Northern	1014	999	1223	1292	1155	5.6
Upper East	925	1320	902	884	912	-2.0
Upper West	982	1089	1171	1086	1022	-7.3
<b>Total or Average</b>	<b>11619</b>	<b>12656</b>	<b>12757</b>	<b>11598</b>	<b>11796</b>	<b>-8.7</b>

Source: Ghana Meteorological Agency

It is important to note that high dependence on rain-fed agricultural systems and limited touch of modern ecologically and economically appropriate technologies has denied many smallholder farmers the opportunity move their activities significantly beyond subsistence to levels of high economic returns. This is not to assume that production issues alone will make farming a viable business. The challenge cut across the whole value change of agriculture, from production to storage and marketing. These issues will further be discussed in the study's context. To give an idea of opportunities for high value agricultural productivity missed, a brief summary of current production levels for selected crops under rain-fed conditions is given in table 1.2.

**Table 1.2 Average Yield of Selected Food Crops under Rain-fed Conditions**

<b>Crop</b>	<b>Average Yield(Mt/Ha) 2009</b>	<b>Achievable Yield (under irrigation and adequate fertiliser application) (Mt/Ha)</b>
Cassava	13.8	48.7
Plantain	11.0	20.0
Yam	15.3	49.0
Cocoyam	6.7	8.0
Maize	1.7	6.0
Rice (Paddy)	2.4	6.5
Cowpea	1.3	2.6
Soybean	1.5	2.3
Groundnut	1.5	2.5
Millet	1.3	2.0
Sorghum	1.3	2.0
Sweet Potato	8.0	24.0
Taro	9.5	12.0
Cocoa	0.4	1.0
Coffee	1.5	-
Cashew	0.8	1.8
Orange	35.0	-
Pawpaw	45.0	75.0
Mango	11.0	-
Pineapple	50.0	72.0
Cotton	0.8	-
Rubber	0.8	-
Tobacco	1.6	-
Tomato	7.5	15.0
Garden eggs	8.0	15.0
Pepper	6.5	32.3

Source: Crop Research Institute, MoFA (2009)

Note: Indicates yields that have been achieved in cases where more effective extension and use of recommended technologies have occurred. The dashes indicate crops for which no on-farm research findings were available as far as potential yields were concerned. Data on achievable yields have been revised in line with new findings by the Crop Research Institute of MOFA

The national situation is not different, if not better, than the situation in the Ejisu-Juaben municipality. Due to limited access to technology and other modern agricultural systems, bush fallowing, which is a system whereby a piece of land is left for a period to regain its fertility, is highly practised. The length of fallow period has been drastically reduced due partly to the growing population and the increasing demand for lands for uses other than agriculture. This leads to continuous cropping, which can result in loss of soil fertility and adversely affect output levels. Other critical challenges that farmers in the municipality face include fragmented farm lands, limited opportunities for formal access to credit from financial institutions, low access to agricultural extension services due largely to inadequacy of extension officers. Others include high costs of and difficulties in land acquisition (land tenure system), high cost of production due to high cost of farm inputs, and lack of storage and processing facilities. These challenges negatively affect the productivity of small-holder food crop farmers and their capacity to adequately cope with internal and external shocks that affect their livelihoods.

### ***1.5 The Growth and Poverty Reduction Strategy II (GPRS II 2006-2009).***

Ghana's medium term development policy has been outlined in the Ghana Poverty Reduction Strategy I (GPRS I 2003 – 2005) and the Growth and Poverty Reduction Strategy (GPRS II 2006 – 2009). The GPRS I was formulated to enable Ghana to benefit from a significant measure of debt relief under the Highly indebted Poor Country Initiative (HIPC) and to position the country in an improved macroeconomic environment to address critical issues of poverty on an emergency basis (Adutwum, 2006). Thus the focus of GPRS I was to realign the badly distorted macroeconomic environment and improve the conditions for implementation of sectoral policies designed to promote sustainable economic growth and reduce the high incidence of poverty prevalent in the country.

In the GPRS II was a revised medium term development policy framework with the central objective of accelerating the growth of the economy so that Ghana can achieve middle-income status (with a per capita income of at least US\$1000) within a measurable planning period (Adutwum, 2006). This is to be achieved through structural transformation of the economy by developing the private sector, diversifying the export base and increasing agricultural productivity, within a decentralized, democratic environment. The design and preparation of GPRS II (2006-2009) is guided by practical lessons and experiences drawn from the preparation, implementation and monitoring of GPRS I (2003- 2005). It also sought

to operationalise various international agreements which are relevant to the poverty reduction objectives and of which Ghana is signatory. Principal among these are the Millennium Development Goals (MDGs), the New Partnership for African Development (NEPAD) and the African Peer Review Mechanism (APRM), the Convention on the Elimination of all forms of Discrimination against Women (CEDAW) and the African and Beijing Platforms for Action.

The GPRS II was therefore claimed to focus on the implementation of growth-inducing policies and programmes which have the potential to transform the structure of the economy and maximize the benefits of shared accelerated growth. The overall growth that will ensure the attainment of middle income status was expected to be led by the agricultural sector which will provide the necessary inputs for a vibrant agro-processing industrial sector in the medium to long term. Whether these objectives have been significantly met is yet to be objectively ascertained. For a fact, Ghanaian agriculture practise is still dominated by smallholders, most of whom are deficient in their capacity to optimise productivity.

The GPRS II is anchored on the following themes:

- Continued macroeconomic stability
- Accelerated private sector-led growth
- Vigorous human resource development
- Good governance and civic responsibility

The aspect of the policy which focussed on agricultural productivity was the accelerated private sector-led growth component, and this study will focus primary on that theme.

### **1.5.1 Private Sector Competitiveness**

To improve on the competitiveness of the private sector GPRS II focuses on policies which have the strongest potential over the medium term to strengthen the capacity of the private sector. These are expected to:

- improve Ghana's access to global and regional markets;
- enhance the efficiency and accessibility of national markets;
- strengthen firms' competency and capacity to operate effectively and efficiently;
- facilitate private sector access to capital;
- reduce the institutional and legal bottlenecks; and
- support adoption of technological innovation and entrepreneurship

The agricultural sub-sector constitutes majority of the private sector. Priority interventions planned to support accelerated growth in the agricultural sector include the following; reform to land acquisition and property rights; restoration of degraded land and environment; accelerated provision of irrigation infrastructure; enhancing access to credit and inputs for agriculture based on selectively targeted production, processing and export; improving access to mechanized agriculture with modernized extension services, accelerated infrastructure for aquaculture. Consistent with the long-term vision of developing an agro-based industrial economy, the interventions in agriculture will be complemented with appropriate interventions in the trade and industrial sectors. The strategic support sectors identified to facilitate improved productivity in agriculture and agro-industry are transportation, energy, science and technology. The broad policy objectives here were to ensure the rehabilitation, provision, expansion and maintenance of the appropriate package of integrated infrastructure which strategically link production and processing.

Policy interventions within the energy sector focussed on ensuring increased access to alternatives forms of energy by the poor and vulnerable; modernization and expansion of power infrastructure; improving the regulatory environment in the power generation and distribution sub-sector with the view to ensuring efficient service delivery while protecting the poor.

In the GPRS II programme, it was argued that overcoming the challenge to reconcile a broad national policy framework with locally generated needs is fundamental to decentralized development. The reason for this was perhaps to avoid the imposition of a uniform solution to highly diverse issues of all the 138 districts in Ghana. Districts are therefore expected to analyze their specific context and circumstances in line with the GPRS II. This brings to the fore institutional and governance mechanisms (decentralized structures) to address the needs of the citizenry, particularly of the local level. As such, Section 1(3,4), 2 to 11 of the National Development Planning (System) Act 1994 (Act 480) required the National Development Planning Commission to issue from time to time, legislative Instruments and Guidelines to regulate the Decentralized Planning System and to guide District Assemblies (DAs) and Sector Ministries, Departments and Agencies (MDAs) in the preparation of Development Plans (National Development Planning Commission, 2006).

## **1.6 Method in Brief**

### **1.6.1 Research Strategy**

To adequately approach the research questions, a mixture of qualitative and quantitative approaches will be used. This is informed by the researcher's motive for a "qualitative study to provide the context for understanding broad-brush quantitative findings" (Bryman, 2008:620). The focus of the study will be a case study of how the improved agricultural productivity sub-sector of the GPRS II has enhanced farmers' livelihoods. Quantitative indicators and assessments for measurement of concepts such as agricultural productivity and livelihoods will need to be supported by interpretivist techniques of unstructured and semi-structured focus-group discussions, participant observations, among others, which may provide a better understanding of the phenomenon under study than if just one method is used.

### **1.6.2 Research Design**

The research will use a case study design, which will entail a "detailed and intensive analysis of a single case" (Bryman, 2008:52) – the Ejisu-Juaben municipality. As the socio-economic and physical environment of the municipality is basically homogenous, focussing on a case study allow for a rich depth of investigation of the problem under study, which could be generalised to the whole municipality.

### **Data Collection**

The data collection methods to be used will be determined by whether the investigation of a research question requires a qualitative or quantitative approach. Among the methods to be used will include structured interviews, focus group discussions, self-administered questionnaires, observation, and document analysis. These techniques will be used to collect both primary and secondary data relevant for investigation of the research questions. Primary data collection methods involving oral discussions will be voice-taped and carefully transcribed thereafter.

### **Sampling**

To collect relevant primary data, key informants and other stakeholders in the study area, such as local food crop farmers, officials of Ejisu-Juaben Municipal Assembly and other local concerned civil society groups working in the field of agricultural productivity will have to be

sampled and interviewed. The population of the municipality is 144,272 (2006 projection by the Ghana Statistical Service). Out of this, 10 respondents from each of the 10 farming communities will be randomly selected for interviewing, in all totalling 100 respondents. This choice has been conditioned by limited financial resources and time constraints.

Simple random sampling based on a representative sample frame will be used to identify and interview food crop farming households. It will also be borne in mind that participants in the interviews should have a logical and relevant stake (Bryman, 2008) in the study under investigation. With respect to officials of the municipal directorate of the Ministry of Food and Agriculture, a non-probability sampling method such as snowball sampling will be employed to interview officials based on initial contact with actors who are relevant to the research topic and readily accessible. Since responses from these officials are likely to be the same irrespective of age, sex, religion, among others, this method of sampling is deemed convenient.

### **1.6.3 Data Analysis**

Data collected will have to be systematically structured, summarised, and analysed. Statistical tools such as contingency and frequency tables, pie charts, histograms, among others, will be used along with other non-statistical techniques such as interpretivist data analysis and discussions. Recorded interviews also had to be carefully trans-scripted into analysed text. The objective of these were to identify and interpret patterns, with the aim to suggesting possible recommendations for enhancing the effectiveness of the future interventions for improving agricultural productivity and livelihoods of poor and vulnerable groups such as rural food crop farmers. The study employed the Livelihood Assets Status Tracking (LAST) technique based on the Sustainable Livelihoods Framework as a guide to collect and analyse data both qualitatively and quantitatively. A brief description of quantitative and qualitative tools to be used is given below.

#### **1.6.3.1 Quantitative Method**

##### **Preparation of a Livelihood Assets Status Tracking (LAST) Matrix:**

The purpose of this matrix is to provide a simple, quick, and easily-understood assessment of the status of access, endowment, and/or utilization of specified capital assets based on local understanding and perceptions of stakeholders in the system (Elasha, *et al* 2005). The framework is then used to assist in the interpretation of local criteria and indicators of success of the GPRS II in improving smallholder farmers' livelihoods and compare between different



times (pre and post-policy intervention). The framework is based on the five capitals of the sustainable livelihoods framework (social, physical, financial, human, and natural capital) and describes the best and worst status of the five capitals as defined in locally understood terms and perceptions.

This is an adaptation of the method of “Quality of Life Assessment” (Bond & Hulme, 1992 in Elasha, *et al* 2005). For each capital a different range of word pictures, scenarios, or indicators are determined by the relevant stakeholders to represent the best and worst scenarios in their views. The communities are expected to describe the worst case and the best case as well as other stages in between, this will include two to five situations or pictures, and score ranges between 0 and 100% assigned to each situation/picture. This will be used to develop a LAST matrix during a process of livelihood analysis.

### **Estimation of a Transition Matrix**

The main objective of the estimation of a transition matrix is to identify to what extent the GPRS II has helped poor smallholder farmers fared within a threshold income generation frame. The transition matrix is calculated based on the direction of the movement (transition) between two income poverty conditions of a household from 2006 to 2009. Therefore, in the first stage of the estimation process, households are categorised using a relevant poverty line into four categories based on their income status for the initial year (2006) and for the year 2009. Those categories are: extreme poor, vulnerable households, viable households and sustainable households. In the second stage of the estimation process, households are categorised into four household income poverty groups (unsuccessful, struggling, successful and most successful) based on the direction of the transition between two poverty conditions from 2006 to 2009.

#### **1.6.3.2 Qualitative Method**

Using responses from carefully designed questionnaires inspired by the sustainable livelihoods framework, a qualitative and quantitative livelihood assessment will be made. This assessment will look at how an individual, a household, or a community behaves under specific frame conditions. One of the ways to understand livelihood systems is to analyze the coping and adaptive strategies pursued by individuals and communities as a response to external shocks and stresses such as drought and policy failures. There is, however, an important distinction between *coping* and *adaptive* strategies. Coping strategies are often a *short-term* response to a specific shock, such as drought. Actions could include switching to

cultivation of drought-resistant crops or reliance on external food aid. Adaptive strategies, on the other hand, entail a long-term change in *behaviour patterns* as a result of a shock or stress.

## CHAPTER 2

### LITERATURE REVIEW and THEORETICAL FRAMEWORK

#### *2.1 Literature Review*

##### **2.1.1 Role of Agriculture in Sustainable Development**

At its most basic, development can be taken to mean the production of social change that allows people to achieve their human potential (Adams, 2009). Yet, development remains an ambiguous and elusive concept. Sustainable development was first publicised in the World Conservation Strategy in 1981. It was subsequently adopted in the Brundtland Report (1987) to integrate environment and development issues and was given further impetus in the 'Caring for the Earth' document produced jointly by the International Union for Conservation, the World-wide Fund for Nature and the United Nations' Environment Programme (succeeding the earlier World Conservation Strategy). This latter publication states that:

*"Living sustainably depends on accepting a duty to seek harmony with other people and with nature. The guiding rules are that people must share with each other and care for the Earth. Humanity must take no more from nature than nature can replenish. This, in turn, means adopting life-styles and development paths that respect and work within nature's limits"* (IUCN, WWF and UNEP, 1992:18).

However, the Brundtland Report's (1987:13) definition of sustainable development is also very useful – that sustainable development is “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” In this sense, economic and social development initiatives and goals are able to be defined in terms of sustainability. It is recognised that agriculture is the dominant activity for a significant share of the world population and has arguably been identified as one of the viable paths to (rural) sustainable development goals. For instance, in the World Bank's 2008 World Development Report, special attention was given to agriculture as a means to achieving many of the objectives of the Millennium Development Goals.

More broadly, and in the view of John Mellor (an authority at the forefront of the study of agriculture's role in economic development), agriculture contributed food and raw materials for industrial employment, export earnings, surplus or savings for investment in industry and food, and a market for the products of a growing industrial sector (Mellor, 1995). To him, the sheer size of the agricultural sector accords it an important role at the beginning

of the development process and the performance of agriculture affects both overall economic growth and the well-being of a large fraction of the population. In this sense, agriculture is seen to be related to the nonfarm rural sector, the urban sector, and the rest of the global economies in relationships that are complex and continually evolving. To demonstrate this, Mellor examines the lessons drawn from those less-developed countries whose success in agricultural development accelerated growth of other sectors, with favourable impacts on overall growth, employment, income distribution, and dispersal of urbanization. He uses eight case studies that examine the relationship between agricultural and non-agricultural growth and they are chosen to illustrate different methods by which high agricultural growth rates were achieved. Taiwan, the Indian Punjab, and the Philippines represent cases where agricultural growth was fuelled by yield-increasing technological progress; Thailand and Argentina are cases where the expansion of land area was paramount; and Kenya, Costa Rica, and Colombia are cases where the rapid growth in agricultural exports was the basic engine of agricultural expansion.

It is impossible, in the face of space constraints, to comment on all the cases in the volume—only those two opposite scenarios that are appealing are selected. In the Indian Punjab case, success was primarily due to the new seed-fertilizer technology that became available in the mid-1960s. Agricultural output in the Punjab grew 4.5% annually from 1952–53 to 1964–65 and 4.9% annually from 1967–68 to 1987–88, rates that exceeded Taiwan’s rate of agricultural growth between 1953 and 1965 and between 1970 and 1988. The British colonial government had invested heavily in irrigation facilities in the Punjab (fully 40% of British colonial investment in irrigation in India had taken place in the Punjab); land reforms were more vigorously implemented in the Punjab than elsewhere in India; and massive state investment in rural infrastructure, rural education, and agricultural research played an important role in the Punjab success story. A shift in agricultural price policy in India in the mid-1960s, coinciding with the availability of new, high-yielding wheat and rice varieties that resulted in very favourable wheat prices domestically relative to world prices, as well as subsidies for fertilizer and irrigation, also contributed to the Punjab success. Rapid agricultural growth provided stimulus to the non-agricultural sector which grew rapidly, but perhaps less than expected, held down by the national macroeconomic environment.

On the other hand, in the Philippine case, which he describes as “a case of agricultural-led development that failed” (Mellor, 1995 p. 113). The rapid agricultural growth achieved during 1965–80 did not translate into sustainable overall growth, and whatever gains took place in overall income accrued only to a small portion of the population in the region

around Manila. The growth of income was not broad based and failed to provide the demand stimulus to non-agricultural production. The government had invested substantially in agricultural research, in irrigation, and in the energy sector but, relatively speaking, had neglected rural roads. Trade-policy-induced market distortions, such as an overvalued exchange rate (an overvaluation that, to be sure, declined over time) and direct controls on imports and foreign exchange, while spurring double digit industrial growth in the 1950s (which slowed down considerably by the mid-1960s after the early gains from the import-substituting industrialization strategy were captured), adversely affected agricultural performance.

In Tomich, Kilby, and Johnston's (1995) *Transforming Agrarian Economies: Opportunities Missed, Opportunities Seized*, it is noted that a number of developing countries have made tremendous progress in the last few decades in transforming the structure of their economies but, in 58 of them, the majority of their labour force is still in agriculture, including the poorest countries with about 60% of the world's population. The authors designate these countries with the acronym CARL (Countries with Abundant Rural Labour). The authors draw on case studies and a comparative historical analysis to propose a development strategy for these CARLs. The objective is to present "a comprehensive analysis of the state of the art in development strategy for these agrarian economies" (p. 1). The authors argue that several features of the Japanese model of structural transformation of agriculture are applicable and relevant to the CARLs. The story of the agricultural transformations of Japan and the United States is invoked at various places to suggest a "broad-based" development strategy for the CARLs; a "broad-based" strategy is one that will lead to increases in productivity among a large and growing proportion of small farms.

The defining characteristic of these countries with abundant rural labour is that more than 50% of the labour force is in agriculture; further, their productivity is very low and there is widespread poverty. Life is full of hazards, resulting in low life expectancy and high childhood mortality. Productivity is low when measured in terms of output per worker and generally, but not always, when measured in terms of output per unit of land.

The authors maintain that the "six i's"—innovations, inputs, incentives, institution, infrastructure, and initiative—are crucial to a broad-based agricultural development strategy and should be the main concerns of policy makers (p. 166). Evidence from the aftermath of Asia's Green Revolution, for example, from the 1960's onwards may prove this. Denning *et al* (2009) cite the recent Green Revolution in Asia where there was development of fertiliser-responsive, high yielding varieties of crops, improved farmer-access to fertiliser, rural credit,

and improved infrastructure had largely positive socio-economic development effects in the agricultural sector and in the lives of agriculturists. Carr (1997) advocate a set of strategic notions that can guide policy makers in deciding the right priorities in CARLs: a broad-based strategy that promotes productivity growth in a majority of farms will be more efficient and will create more rural nonfarm employment opportunities than a strategy aimed at a subset of large farms; the “six i’s” will also promote expansion of rural nonfarm activities; policies favouring a subset of large farms may, in fact, lead to a bimodal agrarian structure; macro-policies can have an even more powerful effect on agricultural incentives than do sectoral policies; some, but not all, direct measures to enhance rural welfare may have beneficial consequences; and, government’s comparative advantage lies in the provision of essential public goods and services.

However well intentioned and designed agricultural development initiatives may be, a key issue which out to addressed is its effects on the physical environment. The UNEP (2007) documents that for sustainable agricultural development to be achieved, links to the environment must be examined. As Murdoch *et al* (1993) rightfully noted, agriculture produces food by using and modifying biodiversity but may conflict with nature conservation objectives. This situation has partly necessitated the proliferation of various research and schemes on sustainable agriculture. The sustainability of contemporary agriculture is challenged in four main respects. These relate to: a) the destruction of wildlife habitats and valued rural landscapes; b) the pollution of water and air; c) the social and economic costs borne by the farming population; and d) the rate of energy use. Webersik and Wilson (2009) also recognise similar challenges related to the above mentioned and particularly stress the role of science and innovation in addressing development and sustainability challenges in the agricultural sector through means such as appropriate environmental policing and targeting.

The concept of sustainable agriculture itself is coming to mean all things to all people (Clunies-Ross and Hildyard, 1992, Smith 1998). There does seem, however, to be a prevalence of ecological considerations in many definitions. Conway (1987) for example, defines sustainability as the ability of an agro-ecosystem to maintain productivity when subject to a major disturbing force. This represents the *resilience* of the system. Altieri (1989), on the other hand, defines sustainable agriculture as a system which should aim to maintain production in the long-run without degrading the resources base, by using low input technologies that improve soil fertility, by maximising recycling, enhancing biological pest control, diversifying production, and so on.

Sustainable agriculture that protects agricultural resources, biodiversity and climate and promotes diversification has been a significant feature of many countries' development plans with a new social development model based on the concept of social, economic and environmental sustainability (Walcott, 2004). The developed countries, primarily the EU members, have been the first to realise this perceived multifunctional role of (sustainable) agriculture, that is, its capacity to contribute to economic, social and environmental challenges of territorial development – thus sustainable development. Other less developed countries, such as many in Africa, Asia, and Latin America are following suit in this regard, with varying degrees of success.

### **2.1.2 Is the Pursuit of Agricultural Productivity the Ultimate Panacea for Rural Development?**

As the preceding discussion has shown, it is one thing to say “go forth and do agricultural development” and quite another to suggest and ensure ways in which this should be done so as to inspire any realistic confidence that the advice will be followed. The diversity of policy narratives on rural development is almost as diverse as the rural space itself (Ashley and Maxwell, 2001). The crucial question this section attempts to review is whether agriculture can be the engine of rural growth.

The section begins with a totem of the rural development literature, that agriculture is the best way to reduce rural poverty. The arguments and data pulled together by Irz *et al.* (1995, cited in Datt and Ravallion 1996) certainly make a convincing case. They identify twelve separate reasons why agricultural growth might be expected to reduce poverty, at farm level, in the rural economy, and nationally. They are not guaranteed, however. Irz *et al.* provide a list of qualifications and necessary conditions, and stress repeatedly that definitive outcomes cannot be predicted *a priori*. For example agricultural growth may lower food prices and thus provide cheaper wage goods which stimulate industrial growth: however if the economy is open to international trade, prices will not fall below international levels and the benefits may not materialise. Given the interdependency of the theoretical argument, Irz *et al.* review the empirical evidence. They conclude that the benefits are substantial, and that;

*...for the poor, extra farm jobs and higher wages may be the single most obvious benefit (of agricultural growth) followed by the impact of additional spending in the rural economy; and the value to the national economy and social welfare of reduced costs of food.*

A salient theme in D. Gale Johnson's work, in a similar vein, is the importance of agricultural development for general prosperity and for economic diversification (Johnson 2000). Johnson has also noted that most of the world's poor are engaged in farming, so that a key focus of development policy is to raise the incomes of farmers. From a global perspective, increasing the productivity of agriculture, given the fixity of land, is necessary for both poverty reduction and the development of the non-agricultural sector. At the level of the world, agricultural productivity gains, poverty reduction, and the growth of the nonfarm sector are complements. However, the question remains whether these observations imply that every poor country should focus its public resources on agricultural development in order to raise the incomes of people now engaged in farming and whether such a policy is necessary for obtaining economic diversity.

While this issue is highly contended, there are undeniable pieces of evidence to suggest that there is some positive relationship between agricultural growth and non-farm growth. This notwithstanding, to assess how agricultural development affects the composition of rural activities and incomes in rural India, Foster and Rosenzweig (2004) developed a theoretical framework using a series of household data sets from 240 villages covering the period 1971–99. This was used to assess how agricultural technical change actually leads to economic diversification and income growth within the rural sector in the context of an open-economy country in which there are cross-area trade and capital flows. Although I cannot estimate the reliability of the framework, nonetheless the study makes an interesting conclusion. Foster and Rosenzweig found that although the success of the Green Revolution in India and around the world in raising rural incomes and reducing rural poverty by increasing agricultural productivity is widely acknowledged, there is also recognition that a single-minded focus on enhancing productivity growth in agriculture as a source of welfare enhancement in rural areas is likely to be counterproductive in the context of a global economy. Not only is increased global food productivity likely to result in decreased global prices and thus lower returns to poor farmers, but also there are substantial regions of the world where poor climate or topology provide little opportunity for expansion of agricultural yields in the absence of sustained subsidies.

Ashley and Maxwell (2001) also question the feasibility of increasing agricultural productivity alone. The authors give three reasons why. First, that many of the positive effects of agricultural growth depend on small farms being in the vanguard, which they posit to be very problematic. Secondly, the long term global fall in agricultural commodity prices and



terms of trade has undermined the profitability of agriculture as a business, and cast doubts on the continued empirical validity of earlier findings which says otherwise. Thirdly, agriculture is pushing against natural resource boundaries, particularly soil and water. With regard to smallholders, Killick (2001), in a review of evidence of the impact of globalisation on the rural poor, concludes with “concern...about the long-term ability of many poor smallholder farmers to respond adequately to population pressures, growing international competition and agricultural commercialisation (pp.175).

Collier and Dercon (2009) also question the efficacy of smallholder-induced development model in Africa. More specifically, they argue that the perceived wisdom of the likely success of this strategy is based on weaker evidence than is commonly suggested, while both the changing global economic context and climate change suggest that this strategy is unlikely to be successful. The alternative, they argue, is not to ditch smallholders and return to the discredited 1950s and 1960s models of mechanized agriculture in the spirit of the Groundnut Scheme. Rather, it is to consider more flexible organisational models in which not all bets are placed on a single unquestioned mode of production. They argue that fast labour productivity growth is what is needed for large scale productivity but smallholders and the institutions to support and sustain them are weak agents for labour productivity growth in Africa. Similarly, Spencer (2001) cite evidence smallholder agriculture in sub-Saharan Africa forgoes the benefits of specialisation and scale economies: “an important question regarding future agricultural development in sub-Saharan Africa is whether smallholders can enhance their productive efficiency in order to compete with large-scale agriculture”.

A possible way out, from the point of view of interventions targeted at smallholders, could be for governments of developing countries to invest more in public goods for agriculture, and amounting to finding ways to reduce production costs, increase efficiency and improve conditions of marketing and market access. This is the heart of the argument put forward by Kydd and Doward (2000, cited in Ashley and Maxwell, 2001), who argue that the current Washington Consensus on Agriculture (CWA) limits the scope for necessary public investment in the sector. After years of failure of this paradigm, there has been a shift now emphasising the active involvement of the state and other parastatals in provision of various forms of support in the agriculture value chain in the object that this could translate into further development of farm and non-farm productive ventures. In Africa, for instance, political support for this new approach is manifested by the following actions: The development of the Common African Agricultural Development Program of the New Partnership for African Development (NEPAD) of the African Union (CAADP 2002); the

endorsement of the African Green Revolution by all UN member states at the 2005 UN summit (United Nations 2005), by African heads of state at the 2006 Abuja Africa Fertilizer Summit (IFDC 2006), as well as by UN Secretary-General (Ban Kimoon 2008) and his high-level task force on Africa (United Nations 2008)

The Hunger Task Force (UN Millennium Project 2005) identified the need to assist Africa's impoverished smallholders gain access to agriculture inputs—primarily fertilizers, high-yield seeds, and small-scale water management equipment—all within a comprehensive strategy for rural development. On the global scale, this has culminated in ventures such as the UN Millennium Villages Project aimed primarily at empowering impoverished farming communities with science-based and community-led interventions to achieve all Millennium Development Goals by 2015 (Sanchez et al. 2009). On the local level, one such intervention has been the Growth and Poverty Reduction Strategy II.

### **2.1.3 The GPRS II on Smallholder Agricultural Productivity**

A number of studies and evaluations of the Growth and Poverty Reduction Strategy II (GPRS II) have been conducted, largely focussing on identifying good practices and bottlenecks in the project's implementation but offering little on the direct impacts of the strategy specifically on poor rural small-holder farmers (see eg. National Development Planning Commission 2009, IMF 2009, Ankomah 2005, World Bank 2007, Wolter 2008). It becomes worrisome that the specific impacts of a specific development programme on agriculture, the mainstay of many developing country economies, have been given less attention. The challenge of meeting the Millennium Development Goals, and particularly the halving of poverty and hunger by 2015, is immense; and particularly so in rural areas. Dixon *et al* (2004) reports that more than two-thirds of the poor in rural areas in developing countries are smallholder farmers, whose resources, livelihood patterns and income sources are quite heterogeneous. Smallholder farmers still dominate most farming systems of developing countries, as in Ghana, and account for a majority of rural employment and food production.

Controversially, this category of people is among the most poor and vulnerable and growth in the agricultural sector lags behind other sectors. In Ghana about 51 per cent of the poor people live in rural areas, and poverty is deepest among food crop farmers, who are mainly traditional small-scale producers (IFAD, 2010). This is despite the fact that national poverty rates have been cut almost in half, from approximately 51.7 per cent in 1991-1992 to 28.5 per cent in 2005-2006, and poverty decreased by about 17 percentage points in urban areas and by 24 points in rural areas (IFAD, 2010). However, the Ghana Living Standards

Survey 4 and Participatory Poverty Assessments Survey identify the extreme poor or vulnerable and the excluded to include the rural agricultural producers, particularly migrant farm hands, settlers and traditional fishermen and food crop farmers in the country (Ghana Statistical Service, 2000). In addition, food crop farmers contribute nearly two-thirds of total extreme poverty; almost double its share of the total population.

Drakakis-Smith (2000) makes a case for the structuralist view to development that in the process of development, agriculture must decline following a rise in industrialisation and subsequently service growth. While this is true for many countries, Ghana (on the other hand) is using agriculture as a *modus operandi* to develop. The *raison d'être* is that as much as 54% of Ghanaians are engaged in agriculture, agriculture may be the best vehicle to drive development. While this approach has not been followed to the core by any country that has achieved massive poverty reduction, except probably Thailand or Korea, it remains an empirical question whether the approach will deliver what its proponents believe it will deliver.

Nonetheless, since the beginning of the new millennium, African governments, donors and private sector have all stepped up their efforts to revitalise the agricultural sector by mobilising additional resources and putting new business initiatives to work. For instance, Wolter (2008) reports that through the approval of NEPAD's Comprehensive African Agricultural Development Programme in 2003, African leaders agreed to governmental assistance to provide technical and financial support to the agricultural sector and the development of agro-based private sector. At the sub-regional level, the Economic Community of West African States (ECOWAS) had also launched a Regional Poverty Reduction Strategy paper, among its core pillars being the improving of rural agricultural productivity. In Mali for instance, new agribusiness initiatives have been partly directed towards large-scale production of bio-fuel sources such as jatropha. In Ghana, such governmental support have come in the form of interventions such as the GPRS II and the predecessor GPRS I. According to the IMF (2009), one major criticism has been that there appears to be a disconnection of priorities and actual budget expenditures between the GRPS I and GPRS II. For instance, a look at the 2006 budget allocations reveals that in the first year of implementation of GPRS II, a large discrepancy persisted between the government of Ghana's budget provisions and actual budget releases (Wolter, 2008), thereby limiting the scope and effectiveness of the programme.

It is reported that if Ghana wants to attain middle-income status by 2015, agriculture will have to grow by at least 6% per year, and the modernisation of agriculture is imperative

(Republic of Ghana, 2005). Agriculture assumes a critical and strategic importance in the national economy, particularly for promoting rural development. This stems from the belief that increased agricultural productivity holds the key not only to a vibrant industrial activity through a regular and sufficient supply of raw materials but is also capable of increasing the wealth and consequently the well-being of the majority of Ghanaians engaged in that sector (Ankomah, 2005). Yet, this sector, especially the food crop farmers' category, is saddled with many challenges. According to the Ghanaian Ministry of Food and Agriculture, Ghana's production currently meets only half of domestic cereal and meat needs and 60% of domestic fish consumption. Some acceptable level of sufficiency is achieved only in starch staples such as cassava, yam, and plantain, while rice and maize production falls far below demand (Economist Intelligence Unit 2007, Republic of Ghana 2007).

Wolter (2008) has documented a number of reasons why Ghana's food crop production remains below potential levels. Among them is that food crop agriculture is largely rain-fed, with traditional systems of farming still prevailing in most parts of the country. This leaves production at the mercies of the weather. Also, Ghana's irrigation potential remains almost untapped, given that it utilises only about 2.2% of its irrigation potential. Again, poor technology and small production units prohibit economies of scale and lead to sub-optimal yields. For example, maize and rice are produced at a third of their potential yields per hectare (OECD, 2008). Aryeetey (2007) also argues along a different line that the sector suffers from public underinvestment. For instance, the government over-concentrates on promoting export crops at the expense of food crops (which is vital for poverty reduction as majority of poor people are engaged in this sector). Finally, there is no pull from the modern industrial sector and no link between the traditional agricultural sector and the market. In the absence of adequate transport and storage infrastructure, smallholder farmers have hardly any access to local and international markets. There are also reports that smallholders are battling with the issue of changes in accustomed patterns in weather conditions and the impacts this have on their livelihoods.

The Ghana National Development Planning Commission (NDPC, 2009), (on the other hand), reports of highly successful impacts of the policies and programmes under the improving agricultural productivity sub-sector of the GPRS II on agricultural output, household incomes and food security. It states that overall agricultural output in 2008 recorded an increase in growth rate from 2.5% in 2007 to 5.1% in 2008, whereas total domestic production of major staple foods like rice, maize, and cassava recorded significant increases of 13.4%. There is a sharp contrast compared to other reports in that the NDPC

reports of a total production of food crops for human consumption in 2008 of 18,688,000 metric tonnes. One thing for sure is that in most cases food crop production is dictated by weather conditions and is highly seasonal. But how this trend impacts specifically on the livelihoods and coping strategies of rural food farmers has been little investigated. This will be the focus of this research, which will be examined in some amount of detail in the study area.

#### **2.1.4 Climate Change Adaptation in the Smallholder Agricultural Sector**

Despite the publishing of data conforming to the incidence of anthropogenic global climatic change and counter-arguments put forward by climate sceptics, natural changes to accustomed climate patterns, especially rainfall, are observable. In its last report, the Intergovernmental Panel on Climate Change (IPCC) confirmed that during the 21st century, global warming will be more significant in Africa than elsewhere in the world in terms of biodiversity loss, food insecurity, water scarcity, and an increase in drought frequency (IPCC, 2007, Webersik and Wilson, 2009). Climate change is a real concern for the sustainable development of agriculture, especially in many African countries where agriculture is still directly dependent on climate, since rainfall, heat, and sunlight are the main drivers of crop growth. This notwithstanding, an interesting observation is made by Yengoh *et al* (2010) that apart from recognising that the small-scale farmer has limited quantities of land, labour, tools, and highly dependent on nature, we must also be aware that he faces an environment of frightening uncertainty, and that his very survival may depend upon the timing and combination of his few resources in relation to these surroundings. Indigenous people in rural communities may not understand the science of climate change but they may rightly observe and feel its effects, if it happens at all (Gyampoh, *et al.* 2008). Similarly, Waters (1974) also notes that the adaptation technology of African small-hold farming is immensely complex, and that environmental adversity and limited inputs have trained many farmers to be efficient managers of their own production processes. Whilst he recognises that African agriculture has adapted and changed at an increasing rate during the past century, no specific time-series data exist.

Research by Keppo, O'Neil, and Riahl (2007) also suggests that while some aspects of climate change such as longer growing seasons and warmer temperatures may bring benefits (for instance beneficial effects on agricultural productivity in colder climates), there will also be a range of adverse impacts, including reduced water availability and more frequent

extreme weather. In tropical climates such as in Africa, however, many studies show that higher temperatures resulting from climate change decreased (or will decrease) agricultural yields. For instance, Muller et al (2011) in critically reviewing a key conclusion in an IPCC Working Group II Report that yields from rain-fed could be reduced by up to 50% in many African countries by 2020 confirmed that agricultural production is indeed projected to be severely compromised especially in the warm tropical African countries given present state of inadequate adaptation measures. These impacts may put agricultural activities, certainly at the level of smallholders, at significant risk, presenting the challenge of adaptation – to prepare for and cope with these impacts. Many studies carried out recently on the means of livelihood in risk zones show wide ranging reactive or anticipatory coping strategies – anticipatory where systems adjust before the initial impacts take place, and reactive where change is introduced in response to the onset of impacts that will re-occur and reflect a structural change of state of the system: in climate terms, where new temperature and rainfall patterns emerge (Burton, *et al* 2002). The populations do their best to diversify their means of livelihood and to strengthen mechanisms regulating capacity and insurance.

According to Parry *et al* (2004) and for purposes of this study, adaptation measures could be classified on two main levels – policy level and farm level. These could further be categorised as technical (eg. technology for harvesting rain water), management (eg. changes in cropping patterns, soil, and landscape) or infrastructural (changes in drainage, irrigation systems, access). The assumption is that the GPRS II component on smallholder agricultural productivity will assist providing farmers with these adaptation strategies<sup>1</sup>. In evaluating adaptation measures in the context of this study, the process will also involve a stakeholder consultation exercise to obtain practical information on adaptation measures; this will take the form of a questionnaire targeted at farmers in the study area.

## ***2.2. Theoretical Framework***

### **2.2.1 A Framework for Policy-Livelihood Relationships**

To assess the impacts of a policy on livelihoods, it is essential to put records straight as to what the research will mean by livelihoods, and how it affects people's well-being. The concept of livelihood has been extensively discussed among many academics and

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<sup>1</sup> This is against the backdrop that a West African agricultural policy (ECOWAP) which builds on the Comprehensive Africa Agricultural Development Programme (CAADP) specifies that the adaptation of the agricultural sector to climate change be part of the main orientations or visions of agricultural policies developed by ECOWAS Member States, which Ghana is a member

development practitioners. Ellis (2000:28) suggests a definition of livelihood as “the activities, assets, and the access that jointly determine the living gained by an individual or household”. Wallman (1984) on the other hand sees livelihood as more than just a matter of finding or making shelter, transacting money, and providing food. To him, it is equally a matter of the ownership and circulation of information, the management of social relationships, the affirmation of personal significance and group identity, and the interrelation of each of these tasks to the other. However, Carney (1998) presented a definition of livelihoods that is widely accepted;

*“A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capacities and assets both now and in the future, while not undermining the natural resource base”* (Carney, 1998:4).

As useful as these definitions are, the issues of capability and difference in access by various groups and also how culture affects sustainable livelihood is not addressed. Therefore the study re-defines sustainable livelihoods as comprising the capabilities and access of individuals and households to assets and activities that provide a means of living so that a livelihood is deemed sustainable when it operates within a traditional and cultural context adapting to and coping with vulnerability, while maintaining and enhancing assets and resources.

Sustainable livelihood approaches have been adopted by many players in international development as a basis for rural development research and practise, and various frameworks have been devised, the most common being the one documented by the UK Department for International Development (DFID) to represent relationships between 5 interrelated factors in a sustainable livelihoods system – assets, transforming structures and processes, livelihood outcomes, livelihood strategies, and vulnerability context. These factors are further discussed below and incorporated into the framework, which will be used to aid the research’s assessment of the effects of the GPRS II on complex livelihood systems in the study area.

### **Assets**

The livelihoods approach is based on the premise that the asset status of the poor is fundamental to understanding the options open to them, the strategies they adopt to attain livelihoods, the outcomes they aspire to and the vulnerability context under which they operate (Ellis, 2000). DFID distinguishes five categories of assets (or capital) – natural, social,

human, physical and financial (Carney, 1998). It is obvious, however, that the levels of importance in these individual assets in the sustainable livelihood of households differ within and between various contexts. An analysis of assets is a review of what people have (and recognition of what people do not have) rather than an analysis of needs. The asset analysis also considers how access to assets has changed over time, what changes are predicted, what the causes of changes are and how access and control of assets differs between social groups (Carney, 1998).

### **Transforming Structures and Processes**

It is important to understand the *structures* or organisations, and the *processes* such as laws, policies, societal norms, and incentives. Access, control and use of assets are influenced by the institutional structures and processes. An understanding of structures and processes provides the link between the micro (individual, household and community) and the macro (regional, government, powerful private enterprise) (Carney, 1998).

Such an understanding helps to identify areas where restrictions, barriers or constraints occur and explain social process that could impact on livelihood sustainability (Scoones, 1998).

### **Livelihood Outcomes**

A focus on outcomes leads to a focus on achievements, indicators and progress. An understanding of livelihood outcomes is intended to provide, through a participatory enquiry, a range of outcomes that will improve well-being and reduce poverty in its broadest sense (DFID, 1998 in Carney 1998).

### **Livelihood Strategies**

Depending on the assets people have, the structures and processes that impact on them, tradition, and the vulnerability context under which they operate, people choose livelihood strategies that will best provide them with livelihood outcomes. “Livelihood strategies are composed of activities that generate the means of household survival” (Ellis, 2000:40). Livelihood strategies change as the external environment over which people have little control changes. Sometimes unsustainable and unproductive livelihood strategies continue because of tradition and habit, and at other times livelihood activities are introduced as *coping strategies* in difficult times.

Scoones (1998) identifies three types of rural livelihood strategies: agricultural intensification or extensification, livelihood diversification including both paid employment



and rural enterprises, and migration (including income generation and remittances). Carney (1998) lists these categories of livelihood strategies as natural resource based, non natural resource based and migration, while Ellis (2000), in a similar framework, categorises livelihood strategies as natural resource based activities or non-natural resource based activities (including remittances and other transfers). In sub-Saharan Africa rural economies, reciprocity in the form of gift giving, sharing and distribution of food and money, among others, also constitute important livelihood sources and adaptation strategies to livelihood vulnerabilities for others. Understanding the diverse and dynamic livelihood strategies is important so that interventions are appropriate. Clearly, introducing new livelihood strategies is an option in rural development but people often favour tradition and security over higher but more risky income (Perez-Izadi & Cahn, 2000)

### **Vulnerability Context**

People's livelihoods and their access and control of resources can be affected by events largely beyond their control. The vulnerability context firstly frames the external environment in which people exist (DFID, 1998:13). For example:

- trends in population growth, national and international economics, natural resources, politics, and technology,
- sudden shocks or events such as disease, earthquakes, floods, droughts, conflict, agricultural problems such as pests and disease, economic shocks, and
- seasonal variability of prices, production, employment opportunities or health can impact on livelihoods (DFID, 1998).

Culture (including gender) and household dynamics can also cause risk and vulnerability (Cahn, 2002). The vulnerability context is secondly about how people adapt to and cope with stresses and shocks.

### **2.2.2 Conceptual Framework of Sustainable Livelihoods Dynamics**

Having presented the DFID sustainable livelihoods theoretical framework in detail in the previous section, this section seeks to take the discussion further by adapting the framework to suit the study's purposes.

Although the application of the sustainable livelihoods framework has proved a useful framework of empirical analysis in poverty reduction systems in many societies, it cannot be over-generalised that its successful application is universal. This is in recognition of the fact that the processes of poverty reduction systems do not operate in isolation from influences

that condition the flows through the livelihood, the choices available and the overall outcomes of the livelihood (Cahn, 2000).

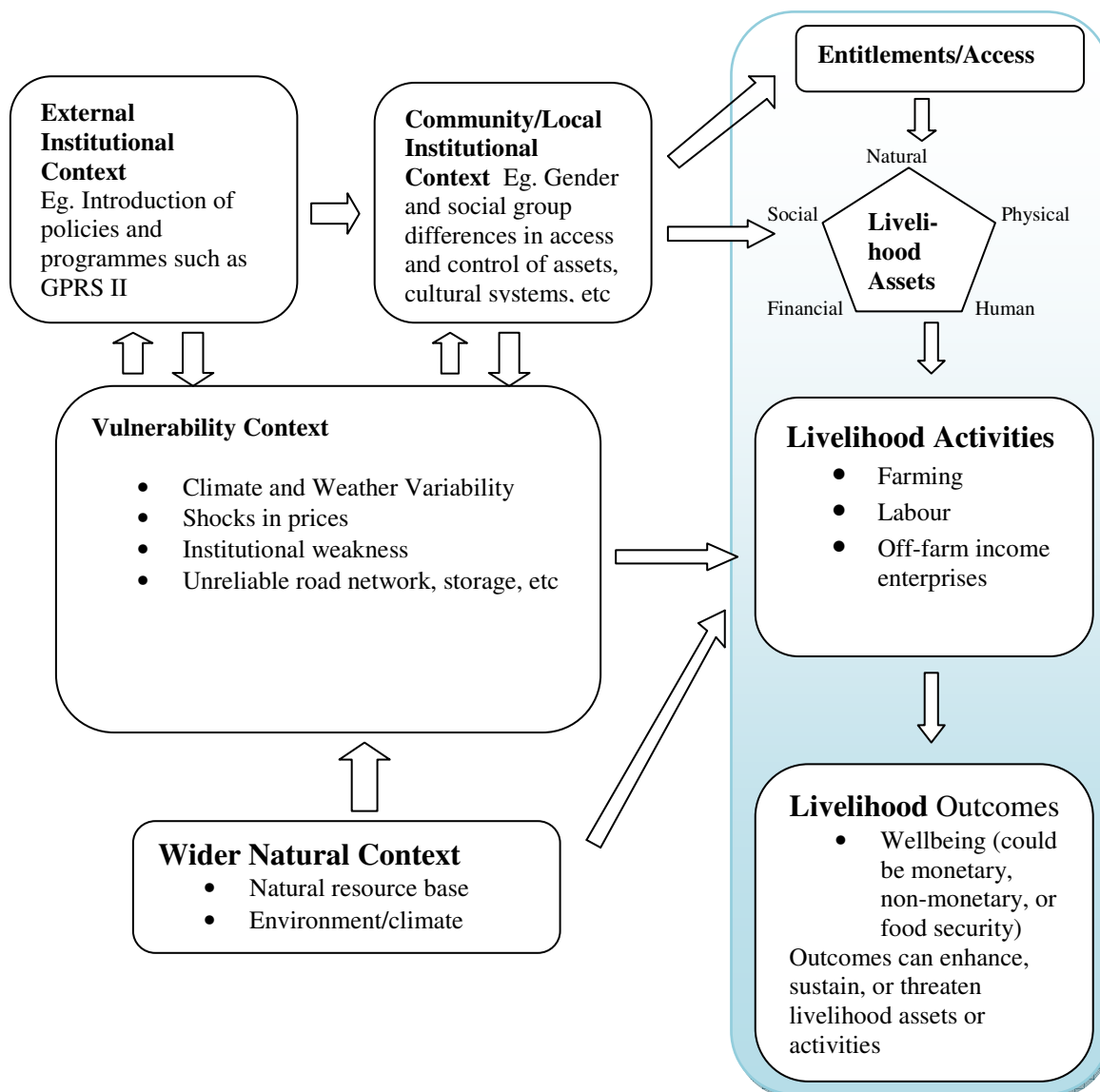
To better incorporate socio-economic variables and contextual factors that affect the interventions and outcomes of the GPRS II such as gender, age, education, and social group differences in access to livelihood capital assets and cultural/technological barriers to adoption of new scientific methods<sup>2</sup>, the DFID sustainable livelihoods framework has been adapted to suit the study's purposes. By "cultural barriers" it is not to be suggested by any means that 'culture' is an impediment to economic development and other poverty reduction interventions. For example, obligations to community, collective rather than individual motivation, antagonistic feelings towards individual economic gain, commitment to ceremonies and gift giving, sharing and distribution of food and money, the influence of religious organisations, power and status of individuals, and gender issues have all been cited as reasons why small businesses fail in many developing countries. Some of these so-called 'impediments' to economic growth are in fact fundamental to the traditional economic systems (Hooper and James, 1994). Rather than culture being regarded as an obstacle, it needs to be the basis of a more sustainable, equitable form of development as the study's adopted definition of sustainable livelihoods suggest.

In a nutshell, the aim of the adapted framework is to capture the essence that access to assets, informal and formal rights, the 'institutions' which govern women and men's lives at the household level differ significantly. Variance in literacy and formal education levels, domestic and community responsibilities, social customs all influence the impact that interventions will have on households. This is diagrammatically represented to produce a framework of livelihoods dynamics in figure 2.2.

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<sup>2</sup> For instance Cahn (2000) has observed that among the challenges of introducing new livelihood strategies an option in rural development is that people often favour tradition and security over higher but more risky income. Also, in sub-Saharan rural communities, the influence of culture and the traditional sector is much stronger in determining outcomes of an intervention.

**Figure 2.1 Framework of Sustainable Livelihoods Dynamics**



Source: Author, adapted from DFID, 1998

Applying this adapted framework, the study can now ‘map’ the consequences of change; in this case changes brought about through external interventions such as the GPRS II and its impacts. Its application in the study is as described below.

- First, there are initiatives such as the GPRS II which may change the hitherto **external policy and legal context**, with stated objectives and desired outcomes.
- The approach should also seek to, where necessary, change and/or adapt to the **local social and institutional context**, both through raising awareness and understanding and other support systems that help build better livelihood development activities and by creating new local institutions (eg. cooperative groups and common-pull resources management committees). The local social and institutional context may be rooted in contextual factors and

socio-economic variables such as variances in gender, age, and social group access to productive capital assets.

- This may change the **entitlements and access** of individual households to productive livelihood assets such as physical, social, financial, natural, and human capital. The effects on this will vary from household to household, depending on, among others, existing control of resources, ability of households to respond effectively to interventions and their potential for undertaking viable livelihood activities. The combination of better access to the productive capital assets and new institutions can have a positive impact on the **wider natural contexts** on farmlands and other livelihood resources, for example, with improvements to resource condition observable where successful value chain agricultural production systems have been developed. This of course depends on whether the process is both egalitarian and effective.
- This in turn means that **livelihood activities** such as farming will be more productive and/or sustainable (and may take less time, with benefits for other livelihood activities).
- **Outcomes** such as sustainable income and food security will be improved, with more secure flows of gathered products. There is high potential for increased cash income through the sale of these products. This may accrue as income to individual households or to the community, allowing them to invest in local facilities such as water schemes, nurseries, schooling, better housing, etc.

## ***5.2 Operationalisation of Key Concepts***

The key concepts in this research are **livelihoods**, **coping strategies**, and **sustainable development**. A livelihood in this context has already been explained, and the five livelihood assets outlined in the adapted framework will be used to measure smallholders' livelihoods. Coping strategies denote often a *short-term* response to a specific shock, such as drought and variability in weather and climatic conditions. As will be analysed later in this research, the livelihoods of people in high-risk or highly variable environments ought to exhibit considerable self-reliance and flexibility, as well as a high degree of careful adaptation to cope with changing local environ-institutional conditions within and between years (Adams, 2009). Again this study conceives outcomes of the GPRS II to lead to sustainable development when resources on which smallholder farmers rely for their livelihoods are secured for the long-term and that individual people and communities lay claim to the prerequisites of the programme targeted at their well-being.

The following measures of concepts will also be guiding the analysis of findings, in recognition of the fact that access to, creation, transfer and accumulation of assets is a key element of generating sustainable livelihoods.

**Natural capital:** consists of land, water and biological resources such as pasture, and biodiversity. The productivity of these resources may be degraded or improved by human management.

**Financial capital:** Consists of stocks of money or other savings in liquid form such as insurance policies. In this sense it does not include financial assets only but also include easily disposable assets such as livestock, which in other senses may be considered as natural capital. It includes income levels, variability over time, and distribution within society of financial savings, access to credit, and debt levels.

**Physical capital:** Is created by economic production. It includes infrastructure such as roads, irrigation works, electricity, reticulated equipment and housing.

**Human capital:** Is constituted by the quantity and quality of labour available. At household level, therefore, it is determined by household size, but also by education, skills, and health of household members.

**Social capital:** Any assets such as rights or claims that are derived from membership of a group. This includes the ability to call on friends or kin for help in times of need, support from trade or professional associations (e.g framers' associations) and political claims on chiefs or politicians to provide assistance.



## **CHAPTER 3: METHODOLOGY**

This research is mainly based on a conceptual understanding of the role and significance of the provision and development of 5 essential capital assets in promoting sustainable livelihoods within a decentralised state provision arrangement. This was substantiated through an in-depth case study exploring the nature and levels of productive capital asset development in the context of aspects of a medium-term national development policy which concentrates on agricultural development. The chapter is organised in four sections. The first section discusses the research design of the study. The second section discusses qualitative methods applied in the thesis. The main objective of the use of qualitative methods in this research was to investigate thoroughly research questions 1 to 4 by examining the various perceptions and perspectives of the beneficiaries of the GPRS II as well as the implementers in the municipality. The third section discusses tools used in the quantitative component of the thesis. The use of quantitative methodologies was to investigate the fifth research question, and by extension the proposition of the study. The final section will present a communication strategy with the social reality that is researched and a host of other ethical considerations in the conduct of the study.

### ***3.1 Research Design and Method***

A choice of case study research design was carefully made and adopted to provide a coherent framework for the collection and analysis of empirical data. The choice of case study design fits into the study's occupation with a detailed and intensive analysis of a single case with the objective of consciously enhancing the reliability, replicability, and validity of the research findings so as to generalise to a wider.

This research concurrently used a mixed methods research strategy, which is a combination of quantitative and qualitative research approaches within different phases of the research to collect and analyse data. Qualitative and quantitative data were collected concurrently, as in the triangulation and offset approach of the mixed research method strategy (Bryman, 2008), to analyse, converge, and validate findings from data depending on the nature of the research questions in a complementary manner. In other words, the choice of design and approach was informed by the researcher's motive for a "qualitative study to provide the context for understanding broad-brush quantitative findings" (Bryman, 2008:620) in a people-centred approach. This concurrent triangulation approach allowed for explanation of phenomena and to explore process-related dynamics at the same time (Rauscher and

Greenfield, 2009). For instance, this design offered the potential for capturing the immediacy of the qualitative and quantitative processes of inadequate and unequal access to agricultural extension facilities experiences. In this aspect, the study was able to incorporate significant open- and close-ended questions in survey and other data collection instruments so that both qualitative and quantitative data are collected efficiently. This ensured that a structured survey instrument with standardised measures can be distributed to the larger unit of samples while structured interviews are simultaneously conducted with smaller subsamples of the larger population to explore questions that are not easily quantifiable.

In this design, each research approach can offset the limitations of the other and also allowing the researcher to assess different aspects of the research questions such as the “what”, “how”, and “why” aspects at the same time. Thus, there become pragmatic and ideological grounds to justify case study design and mixed methods research using a triangulation and offset approach in this project.

### **3.1.1 Data and Sample**

#### **Data**

There is the need to collect and analyse appropriate data to achieve the objectives of the research and answer the research questions. Data needs for the research were both primary (empirical) and secondary. Work on data needs started with an extensive and comprehensive literature search on existing knowledge on key concepts that relates to the subject of this study. Primary data collection tools such as a structured questionnaire and interviews were then designed to elicit first-hand empirical data depicting actual situations on the ground in the study. Other tools included the tertiary method of document analysis mainly involving the negotiation of access and use of official documents such as action plans of the Ejisu-Juabeng municipal directorate of the Ministry of Food and Agriculture and other documents of relevance to an issue being investigated in the study. According to Bryman (2008) analysis of documents provide useful means for researchers conducting case studies of organisations, but needs to be critically evaluated using Scott’s 4 criteria which are *authenticity*, *credibility*, *representativeness* and *meaning* (Bryman, 2008). The criteria of *credibility* and *representativeness* were the issues of most concern to this analysis.

The data collection tools captured both measurable (quantitative data such as income, number of dependents, etc) and non-measurable (qualitative data as opinions and perceptions) indicators of concepts. A unique tendency the study also captured was to use a set of



subjective based criteria to convert otherwise non-measurable data into measurable data, especially in the Livelihood Asset Status Tracking assessment. An important issue of notice is the reliability of data. It could have been more reliable if baseline data was recorded and maintained by the Ejisu-Juaben municipal registry about conditions of farmers prior to the GPRS II and possibly conditions after programme inception. Unfortunately, such a baseline data set had not been maintained. However, it was revealed there are plans to maintain such a data set in the future.

Therefore, it became problematic to obtain accurate and precise baseline information from respondents. A solution was to skilfully query respondents to cast their minds back to their living and working conditions prior and after the programme's life cycle. This could influence the reliability of the data especially in case of income data as respondents may under-state or over-state their incomes either to presumably gain sympathy or 'impress' the interviewer or may not accurately recollect.

However, the survey paid particular attention to the need to ask questions that did not require long-term, detailed memory, and were therefore answerable with a high degree of accuracy. Therefore, highly disaggregated data were collected, and then aggregated.

## **Sample**

There is a need to select a representative sample from the population of the study area for collection of relevant data. The respondents included officials of the municipal directorate of the Ministry of Food and Agriculture and sampled smallholder farmers distributed in the municipality. Some concerned civil society groups working in the field of agricultural development in the study area were also consulted.

The 10 most predominantly farming communities evenly distributed in the Ejisu-Juaben municipality were selected as study sites based on advice from local inhabitants with no influence or interest in the study's outcome, with 10 farmers randomly sampled from each of the 10 communities so that a total of 100 respondents provided the sample population. This arrangement was made not only to ensure that sample units cover the entire geographical space of the municipality but also it ensures that conclusions drawn for such sample can have a higher degree of generalisation.

Specifically, stratified sampling, involving a statistical division of the population of interest in the various communities into strata of farmers in different suburbs in each of the 10 communities, and a further selection of units within these strata using simple random sample was used to form samples to be interviewed and for discussions from each stratum. The use

of stratified sampling complemented with random sampling implies that each farming household has an equal probability of selection in the sample. A relevant consideration borne in mind was that participants sampled for the interviews and discussions should have a logical and relevant stake (Bryman, 2008) in the study under investigation so as to elicit potentially higher response rates. With respect to the official of the municipal directorate of the Ministry of Food and Agriculture interviewed (i.e. the Municipal Director), a non-probability sampling method was employed. Table 3.1 shows a table of farming communities selected and number of sampled units in each of those communities.

**Table 3.1 List of Selected Farming Communities in Ejisu-Juaben Municipality and Number of Sample Units**

<b>Community</b>	<b>Number of Sample Units</b>
Boamadumase	10
New Koforidua	10
Nobewam	10
Achiase	10
Wabiri	10
Pemenasi	10
Baworo	10
Kotei	10
Besease	10
Kwaso	10
<b>Total</b>	<b>100</b>

### ***3.2 Qualitative Method***

The use of qualitative research method was generally to answer research questions 1 to 4. Structured and semi-structured interviews and other forms of informal qualitative dialogue with key stakeholders in the research were the main methods used. The initial plan was to use structured interviews but the process evolved into a semi-structured dialogue as the process continued.

The purpose of structured interviews was to collect general and specific information through conversations with key informants and focus groups. A focus group discussion involving 10 farmers and one Agricultural Extension Agent was also organised to obtain a set

of criteria and indicators around the five capital assets describe ‘word pictures’ ranging from best case scenarios to worst case scenarios in the LAST matrix to aid measure successes or failures capturing pre- and post-programme period.

The use of structured interviews was to help keep the interviewing within a particular focus in strict accordance to the research questions. However, the process became a semi-structured dialogue when necessary as a means to avoid some of the negative aspects of formal structured interviews, which include closed themes, the absence of two-way information exchange and dialogue, and an inability to adapt to the participants’ perspectives. The initial step in semi-structured interviewing was to construct an interview guide containing a summary of the essential themes to be covered during the session. The interview guide served as a reminder of what the researcher aimed to learn in the session. This way, the interview guide was not rigid, and was adapted constantly following the results of a session. Following the conception of the interview guide, the second step was to select the interview participants. Here also, it is important that chosen participants be relevant to the research objective. It is equally important that there is a representative sample of the population and that no key stakeholders be left out. Each interview lasted from 20 minutes to over 1 hour.

Agricultural Extension Agents (AEA) resident in each of the communities provided assistance in seeking oral consent of identified respondents in the interview process, following an important the code of ethics in social research. An mp4 recorder was used to record the responses. The recorded interviews were then carefully trans-scripted into analysed text. The objective of these was to identify and interpret patterns. Throughout the interview processes, I introduced myself and my research objectives to the participant, and informed each participant of the purpose of my work in the village before asking for oral consent to continue with the interview. I attempted, at all times, to make the participants comfortable, to allow them do most of the talking and to always be flexible with the interview process. After each session I held a briefing to ensure that all essential details had been noted, and to reflect upon the data collection process and the results of the interview.

### ***3.3 Quantitative Method***

#### **3.3.1 Methods of Quantitative Analysis**

Measurable quantitative data collected was systematically structured, summarised, and analysed to communicate what was found on the ground. Statistical techniques such as

contingency and frequency tables, pie charts, histograms, among others, were employed using computer-assisted tools such as SPSS along with other non-statistical techniques such as interpretivist data analysis and discussions. Quantitative analytical methods were used especially to answer research question 5 using an adapted Livelihood Asset Status Tracking (LAST) index of the Sustainable Livelihoods Framework.

LAST assessment employs a multidimensional method of measuring livelihoods and human development, and is intended to measure the changes in five capital asset groups as a proxy for impact of the GPRS. In this method, indicators of five capital assets (social, financial, human, physical, and natural assets) needed by local farmers to develop sustainable livelihoods are measured using a LAST framework matrix. The methodology adopts a multidimensional view of poverty in its analysis. The purpose of this matrix is to provide a simple, quick, and easily-understood assessment of the status of access, endowment, and/or utilization of capitals based on local understanding and perceptions of stakeholders in the GPRS system. The framework is then used to assist in the interpretation of local criteria and indicators of success of the GPRS and compare between different times (pre and post- project intervention).

The five capitals of the sustainable livelihoods framework will describe the best and worst status of the five capitals as defined in locally understood terms and perceptions. For each capital a different range of word pictures<sup>3</sup>, scenarios, or indicators are determined by the relevant stakeholders to represent the best and worst scenarios in their views.

Through a participatory focus group discussion, communities described the worst case and the best case as well as other stages in between, this can include anything from two to five situations or pictures. The “word pictures” and other verbal descriptions of the asset status of households were combined in a matrix to assist in scoring a balance of aspects for each type of capital asset i.e. relating to production, equity, sustainability. Table 3.2 summarises the development of criteria and indicators around the capital assets.

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<sup>3</sup>Word pictures are the main tool of the LAST system for gathering and reorganizing data. Word pictures are description of household circumstances developed in a participatory manner with the community in question.

**Table 3.2 Dimensions, Criteria, and Indicators for the LAST Assessment**

<b>CAPITAL ASSETS</b>	<b>DIMENSION</b>	<b>CRITERIA</b>	<b>INDICATORS</b>
<b>Natural Capital</b>	<i>Productivity</i>	<ul style="list-style-type: none"> <li>• Land area and productivity</li> <li>• Farm output production</li> </ul>	<ul style="list-style-type: none"> <li>- Area of improved/rehabilitated farmland</li> <li>- Average ton of farm produce per hectare yearly</li> </ul>
	<i>Equity</i>	<ul style="list-style-type: none"> <li>• Access of farmers to farmlands</li> </ul>	
	<i>Sustainability</i>	<ul style="list-style-type: none"> <li>• Farmland quality</li> </ul>	<ul style="list-style-type: none"> <li>- Abundance of desirable farm produce from farm</li> </ul>
<b>Financial Capital</b>	<i>Productivity</i>	<ul style="list-style-type: none"> <li>• Household income</li> <li>• Farm produce effectively marketed</li> </ul>	<ul style="list-style-type: none"> <li>- Household income levels, sources, stability, and sufficiency</li> <li>- Amount of farm output sold/marketed</li> </ul>
	<i>Equity</i>	<ul style="list-style-type: none"> <li>• Equitable access to cash credit and other farm insurance</li> </ul>	<ul style="list-style-type: none"> <li>- Percentage of farmers receiving credit, ability of women to obtain credit, Insurance products</li> </ul>
	<i>Sustainability</i>	<ul style="list-style-type: none"> <li>• Economic stability of income generating activities</li> </ul>	<ul style="list-style-type: none"> <li>- Availability of information on weather forecast, Institutional support (eg. subsidies)</li> </ul>
<b>Human Capital</b>	<i>Productivity</i>	<ul style="list-style-type: none"> <li>• State of social services</li> </ul>	<ul style="list-style-type: none"> <li>- Availability of quality socio-economic amenities, Accessibility of extension officers</li> </ul>
	<i>Equity</i>	<ul style="list-style-type: none"> <li>• Membership of local unions for social capital development</li> </ul>	<ul style="list-style-type: none"> <li>- Percentage of farmers who have membership in effective co-operatives</li> </ul>
	<i>Sustainability</i>	<ul style="list-style-type: none"> <li>• Level of environmental awareness (conservation measures)</li> </ul>	<ul style="list-style-type: none"> <li>- Rate of adoption of environmentally sound farming practises by households</li> </ul>
<b>Physical Capital</b>	<i>Productivity</i>	<ul style="list-style-type: none"> <li>• Farm produce storage capacities</li> <li>• Access to modern technologies such as irrigation facilities</li> </ul>	<ul style="list-style-type: none"> <li>- Quality of storage systems used</li> <li>- Number and functionality of irrigation systems</li> </ul>
	<i>Equity</i>	<ul style="list-style-type: none"> <li>• Coverage of access roads and other marketing facilities in local communities</li> </ul>	<ul style="list-style-type: none"> <li>- All weather road coverage in communities, Time and cost to reach nearest market</li> </ul>
	<i>Sustainability</i>	<ul style="list-style-type: none"> <li>• Training of workers (capacity building)</li> </ul>	<ul style="list-style-type: none"> <li>- Humber of trained workers for doing routine maintenance of physical facilities (eg.irrigation)</li> </ul>
<b>Social Capital</b>	<i>Productivity</i>	<ul style="list-style-type: none"> <li>• Role of local committees on the organisation and promotion of farmers' interests</li> </ul>	<ul style="list-style-type: none"> <li>- Percentage of farmers who participate in farmers' and communal mobilisation activities</li> </ul>
	<i>Equity</i>	<ul style="list-style-type: none"> <li>• Participation in the decision-making processes, and access of marginal groups to decision-making processes</li> </ul>	<ul style="list-style-type: none"> <li>- Representation of farmers groups in decision-making processes at the municipal level</li> </ul>
	<i>Sustainability</i>	<ul style="list-style-type: none"> <li>• Provision by government of institutional support to local community institutions</li> </ul>	<ul style="list-style-type: none"> <li>- Number of coordinated activities between municipal agric agency -and local communities</li> </ul>

Source: Author, 2011

This process develops a local worldview, and score intervals ranging from 0% (worse case) to 100% (best case) are assigned to responses based on the researcher's observation and interviewees' responses to semi-structured interviews on a locally meaningful scale. The purpose of scoring the "word pictures" is to convert qualitative data into measureable quantitative data. In converting qualitative data into measureable quantitative scores, the five (5) columns of probable responses as indicators of concepts of each of the five capital assets in the LAST sheet will be assigned score intervals of 0 – 20, 20 – 40, 40 – 60, 60 – 80, and 80 – 100. For each question, the interviewee should simultaneously give one response to indicate their circumstances/experience *prior* to the project, and one response to indicate their circumstances/experience *after* the project. At present no official statistical profile such as income poverty status of farmers in the municipality exists to possibly back-up and match some of the respondents' answers. However, responses were compared with objective observations and other information obtained from further probing where necessary, which sought to make the index more valid and reliable. Also, some results were compared with official statistical data on issues such as income levels, land sizes, among others. With each response corresponding to a particular score interval, a specific absolute score will then be obtained by determining the middle value of the interval score corresponding to that response (a LAST sheet is shown in *appendix 2*). The avoidance of absolute values by scaling from 0 per cent worst to 100 per cent best is an already established technique in, for example, the UNDP Human Development Index (UNDP, 1990). Another reason is to avoid the occurrence of perfect index score of 1.00, which may send a signal (of false confidence) that the GPRS II was a "magic bullet" in hammering out poverty entirely. This is also to make a case along an arguable issue that human intervention, no matter how expertly designed and executed, may not be able to adequately meet all the increasingly unlimited and dynamic wants and needs of humans.

Obtained data from this process is used to produce a Livelihood Asset Status Tracking framework matrix. However, in order to answer research question 5, an adapted LAST index methodology will be calculated and used. The process is as described below.

In an adapted method for estimating the LAST index, I first determine the product of the score for each response in the LAST sheet (see *appendices 1 and 2*) to the total number of questions (indicators) in the LAST matrix, assuming that each response scored 100% to produce a "Perfect Summation". This figure will then be used as a *predetermined baseline*

denominator to determine a LAST index for each household. In this case, a Perfect Score Index score of 1.00 will be obtained.

To accurately determine the index for each household, the sum of total percentile scores from responses in the LAST sheet for each household will be divided by the predetermined baseline denominator. This can be represented as follows:

$$\sum \frac{Y_1+Y_2+\dots+n}{M} \dots\dots\dots 1$$

From equation 1, Y is the percentile score of responses for each of the elements (indicators) comprising the capital asset of households up to the *n<sup>th</sup>* last response score for a capital asset. The summation of response scores divided by the “Perfect Summation” – M – provides the LAST index for each of the households. The process can then be repeated to produce a LAST index separately for each of the capital assets for each household prior to and before the GPRS II programme. The specific LAST formula for each of the capital assets is summarised in *appendix 1*. It must be noted, however, that this method does not include measurement of statistical significance, and validity of the results must therefore be seen in light of the objective observations and other qualitative findings that the calculation seeks to compliment.

Therefore, using LAST index data from the analysis, it is possible to categorize the respondent households into the following four groups:

Category 1: **Extreme poor** = LAST index score of between 0.01 and 0.30

Category 2: **Vulnerable households** = LAST index score of between 0.31 and 0.59

Category 3: **Viable households** = LAST index score of between 0.60 and 0.79

Category 4: **Sustainable livelihoods** = LAST index score of between 0.80 and 1.00

At Category 1, it means that a LAST response score of between 0 – 20 and 20 – 40 on the LAST Sheet may have predominantly applied to the respondent’s (household’s) situation. At Category 2, the predominant LAST response applying to that household is 40 – 60. Similarly, Category 3 reflect the circumstances of household whose predominant LAST response score was between 60 – 80 while Category 4 will capture the circumstances of a household whose LAST response score mainly fell in the range of 80 – 100. However, a fluctuating mix of low value and high value scores on the LAST sheet may produce a LAST index falling into any of

the four categories stated above. In such circumstances, it means the rate of development of all 5 capital assets is (largely) polarised and unequal.

In the next step I examine the movement (transition) between these four categories from 2006 to 2009. The aim is to estimate a transition matrix. This helps to determine what effect, if any, the GPRS II has had on its beneficiaries over its 4 year implementation period.

Based on calculations obtained for the LAST index of the households, I also categorize smallholder farmers into unsuccessful, struggling, successful and most successful groups (Table 3.3) based on the direction of the transition (“economic mobility”) of livelihood categories from PRIOR and AFTER the GPRS II period (i.e. before 2006 and after 2006-2009) between extreme poor, vulnerable households, viable households and sustainable livelihoods. A summary of the criteria for categorisation based on the 4 categories described above is simplified in Table 3.3.

**Table 3.3 Categorisation of Household Groups Based on the Direction of the Transition between Poverty Categories PRIOR and AFTER the GPRS II Period**

<b>Households Group</b>	<b>Direction of the transition</b>
Unsuccessful	<b>From</b> viable/sustainable <b>To</b> Vulnerable <b>From</b> vulnerable/viable <b>To</b> extreme poor <b>Or</b> <b>Remained</b> in extreme poverty
Struggling	<b>Remained</b> in vulnerable
Successful	<b>From</b> extreme poverty <b>To</b> vulnerable/viable <b>Or</b> <b>From</b> vulnerable <b>To</b> viable
Most successful	<b>From</b> extreme/vulnerable/viable <b>To</b> sustainable <b>Or</b> <b>Remained</b> in viable/sustainable

### **3.4 Ethical Issues**

As noted in chapter one, the study areas for this research are predominantly rural communities where coverage of basic social amenities are short in supply and formal educational and literacy levels above senior high school is generally very low. These problems have further been exacerbated by high incidence of poverty in the area. Coupled with this is the issue of



'suspicion' many rural inhabitants have about 'outsiders' coming to interfere with their culture and other ways of life in their communities. This situation has also stemmed from instances where many urban dwellers have tended to regard rural inhabitants as 'uncivilised'. There is also apparent power gap between men and women, between children and adults, and between the extreme poor and relatively well-off.

Because the research will be carried out in this real-world circumstance and involves close and open communication among the people involved, close attention was paid to how the research is going to communicate with this social reality. For instance, some respondents were less willing to discuss their livelihood activity or provide truthful responses that depict the real situation for fear of the stigma and discrimination of being labelled as "worthless in material senses" either by the researcher or the other informants in focus group discussions. It was envisaged that "personal" and sensitive issues will best, in such circumstances, be discussed on one-on-one basis under the assurance of utmost confidentiality.

Another salient issue which mediated my experience studying about (the Ejisu-Juaben directorate of) MoFA was the question of how to represent MoFA textually in the thesis. The question of how I might represent the observations of respondents at MoFA and draw conclusions did draw some concern during the fieldwork period. My overall impression of MoFA is that they are proud of their work and thus very confident about their outward representation. Although I believe that MoFA would willingly accept honest and well-formed criticism, they are concerned about their work being "misunderstood". For instance, farmers struggling to take up new improved farming methods might be viewed by an outside researcher as a problem with agricultural extension, whereas MoFA management and staffs might see the same situation as a work-in-progress or a project that simply has not yet borne fruit. In these conditions, "success" or "failure" is not defined in such strict terms (Crewe & Harrison, 1998). In particular, the time-frame used to determine success is often seen as infinite (i.e. there are no failures; there are only projects that are not "yet" successes). This situation, I suspect, could be a reason for MoFA to fear being misunderstood. However, this study focuses on a definite time-frame of the inception and end of the GPRS II, whose results can be measured in real terms given that the GPRS II ended in 2009 (2 years ago). Nevertheless, as Mosse (2006: 944) contends, social research must preserve its honour and its ideals for interpretation, and this includes differences of opinion. The researcher's duty is to present his or her findings because, the interests and rights of those studied (i.e. the farmers) should come first (ASA, 1999). In this case, assuming that farming households stand to benefit from the exposure of certain information, and MoFA might improve itself by

internalising certain critiques, then the interests of “those studied” have been served. In the end, representation might involve recasting ‘criticisms’ as ‘lessons to be learned’ or ‘suggestions for improved practices’. In order to be sure of my representation of MoFA, I allowed the director to review my final drafts and offer comments. Although we differed in opinion on a few points, many others were reconcilable and, additionally, some errors were corrected.

### ***3.5 Limitations of the Study***

Some challenges and limitations were encountered in the course of data collection and writing-up of the research. First, there are possible constraints in data collection and analysis. For instance, during trans-scripting of the interviews, there may be a challenge in picking up the right understanding of what have been said. Also, the challenge of high incidence of illiteracy made it difficult to administer self-completion questionnaires so the researcher had to translate each question into the local language and help farmers choose from a set of multiple-choice options which apply to them. However, conscious efforts in ethical social research were taken into consideration in this process. Again, in analysing data using qualitative techniques, there could be cultural biases.

Furthermore, other data collection biases include “strategic responses” in which there are perceived incentives to under- or over-report crop production, or income, or whatever (Diskin, 1997). For instance, a farmer may choose to under-report his production if he believe his responses may be linked to personal costs (example taxes) or gains (example food aid benefits). A solution to this challenge was to compare respondent’s responses to findings from critical observation of situations on the ground, where possible, and make informed opinions depicting exactly or closer to the reality.

Again, as there were no inventory of income levels of farmers, interviewed farmers were asked to use their memory, which also presents a limitation in capturing actual circumstances. Finally, the number of samples used was based on data obtained from a population census conducted in the year 2000. Actual populations may have changed considerably over the years. Another fault of this research is that the animal husbandry sector of agriculture in the study area was left out of the analysis. The same applied to the off-farm sector. This notwithstanding, only an insignificant portion of farmers in the study area engages directly in those sectors. Therefore, I have found this manoeuvre necessary in order

to concentrate on the GPRS' effects on smallholder crop farmers' livelihoods – the very object of this research.



## **CHAPTER 4**

### **PRESENTATION OF EMPIRICAL FINDINGS AND ANALYSIS**

This chapter will present the empirical findings and analyse these in the light of the literature review and theoretical framework. The chapter is divided into four main parts, and each part is structured to answer each of the five research questions and achieve the research objectives. The first part deals with the strategy of the Ejisu-Juaben municipal directorate of the Ministry of Food and Agriculture (MOFA hereafter) covering the GPRS II period. Specifically, it responds to research question one by outlining the main items on their action plan, the justification and motivations explaining why those strategies were included in the action plan, and how those strategies are implemented. Thus, the issue of how interventions are tailored to conform to the local realities and meet development challenges faced by farmers in host communities are critically looked at. The second part explores the level of knowledge and awareness of local smallholder farmers on MOFA's activities aimed at ensuring agricultural productivity in the municipality. This is done by exploring how farmers are empowered through partnerships, participatory opportunities, information sharing and working relationships by MOFA to better understand and implement the strategies outlined in the action plan. It thus answers research questions two and three. The third part assesses conditions such as climatic characteristics and socio-economic working environments within which farmers operate, answering research question number four. The aim is to ascertain whether or not farmers adversely experience unaccustomed climatic variations and to investigate other challenges farmers face and how they cope with and/or mitigate the effects of such challenges. All these three parts combined, in addition to an assessment of the status of livelihood capital assets endowment of farming households in section four, offer an answer to research question number five – overall performance of the GPRS II to improving agricultural productivity and farmers' livelihoods in the study area.

## **PART 1: Agricultural Development Policy – Monitoring MOFA’s Compliance to the Action Plan**



**Photo 1: A local smallholder farmer on his 3.5-acre farm at Boamadumase** Source: Author (2011)

One of the major aims of the GPRS II has been to achieve the MDG’s, including the reduction of extreme poverty and hunger. In Ghana, the predominant economic activity is agriculture which is dominated by smallholder farmers, and who constitute majority of the poor in Ghana.

As it has been discussed in the review of literature, the fact that agriculture is the predominant economic activity in Ghana has significant implications for Ghana’s choice of development trajectory. In a country where the poor and greater number of the labour force are engaged in agriculture and related activities, the sector’s growth offers a potential model for spearheading broad-based poverty reduction and increased food security in the country. In the GPRS II programme, it was argued that overcoming the challenge to reconcile a broad national policy framework with locally generated needs is fundamental to decentralized development. The reason for this was perhaps to avoid the imposition of uniform interventions to highly diverse issues/situations of all the 138 districts in Ghana. Decentralised metropolitan, municipal, and district authorities are therefore expected to analyze their specific context and circumstances in line with the GPRS II. This brings to the fore institutional and governance mechanisms (decentralized structures) to address the needs of the citizenry, particularly of the local level. As such, Section 1(3,4), 2 to 11 of the National Development Planning (System) Act 1994 (Act 480) required the National Development Planning Commission to issue from time to time, legislative Instruments and Guidelines to regulate the Decentralized Planning System and to guide District Assemblies (DAs) and Sector Ministries, Departments and Agencies

(MDAs) in the preparation of Development Plans (National Development Planning Commission, 2006).

On this ground, the study finds it prudent to critically examine the exact aspects of the GPRS II as the medium term national development policy framework targeted at ensuring agricultural productivity and accelerating the growth of the economy so that Ghana can achieve middle-income status (with a per capita income of at least US\$1000) within a measurable planning period (Adutwum, 2006)<sup>4</sup>. Revisiting the theoretical framework, this portion will cover the local social and institutional context, trying to explore the potency of support systems that are supposed to help build better livelihood development activities.

First of all, I will briefly outline policy interventions and objectives of the national GPRS II plan on agricultural productivity and narrow it down to the action plan of the study area level. This will then form the basis for presenting and analysing findings on how localised the municipal level action plan have been designed based on comparisons between the interventions in the action plan and views and needs of concerned stakeholders. This policy analysis is done against the backdrop that the effectiveness of the policy in rigorously promoting agricultural productivity has strong direct and indirect effects on farmers' livelihoods.

#### ***4.1 The National Level and Local Level Crop Development Policy of the GPRS II***

This section is primarily a descriptive and analytical evaluation of the GPRS II. The aim is to answer research question 1, which deals with the main items of the municipal formal action plan on agricultural productivity and enhancement of farmers' livelihoods, and to what extent the municipal agricultural authority follow the plan. It uses an analycentric approach to policy analysis focusing on the micro-scale.

Following a document analysis of the national GPRS II policy paper, among others it was revealed that priority interventions planned to support accelerated growth in the agricultural sector included the following;

*“reform to land acquisition and property rights; restoration of degraded land and environment; accelerated provision of irrigation infrastructure;*

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<sup>4</sup> Although recent reports in Ghana in the latter parts of 2010 indicated that based on a re-basing of the calculation of national income, Ghana now has a lower middle income country status with a per capita GDP of around US \$1100

*enhancing access to credit and inputs for agriculture based on selectively targeted production, processing and export; improving access to mechanized agriculture with modernized extension services, accelerated infrastructure for aquaculture. Consistent with the long term vision of developing an agro-based industrial economy, the interventions in agriculture will be complemented with appropriate interventions in the trade and industrial sectors. The strategic support sectors identified to facilitate improved productivity in agriculture and agro-industry are transportation, energy, science and technology. The broad policy objectives here were to ensure the rehabilitation, provision, expansion and maintenance of the appropriate package of integrated infrastructure which strategically link production and processing” (Republic of Ghana, 2005 pp. 18).*

The Private Sector Competitiveness thematic area of the GPRS II have been leveraged into a Crop Sub-sector Development Policy of the national Food and Agriculture Sector Development Policy (FASDEP), which is nationally coordinated by the headquarters of the Ministry of Food and Agriculture (MOFA) and implemented at the local levels by metropolitan, municipal, and district level directorates of MOFA according to a decentralised arrangement.

Broadly, the policy on increased food crop productivity focussed on the development of at least, but not limited to, five staple crops (maize, rice, yam, cassava and cowpea). In the policy paper, it was outlined that MOFA’s support to districts for food crop productivity will focus on at most two of the crops and that choice of crops will be based on comparative advantage, importance of the crops to people in the zone and availability of markets. When asked about why only a limited proportion of food crops will be actively promoted in each district, the Ejisu-Juaben municipal director of MOFA had this to say;

*“...that MOFA is under-resourced financially to actively take on board all the major food crops in Ghana in each district. That notwithstanding, our aim and hope is that the transferable technical training we give concerning those few chosen crops can be applied to production of other food crops as well” (Field interview, 2011).*



This finding further confirms Aryeetey's (2007) conclusion that the agricultural sector in Ghana suffers from public underinvestment. It could be suggested that the current Washington Consensus on Agriculture (CWA), which Ghana is a signatory, limits the scope for necessary public investment in the agricultural sector in Ghana. The policy paper also stated that support will be in terms of irrigation and sustainable management of land, improved planting materials, and appropriate mechanisation to enhance productivity along the whole value chain. A summary of a selection of the national policy strategies and specific interventions of each of those strategies is presented in Table 4.1.

**Table 4.1 Crop Sub-sector National Policy Strategies and Their Specific Interventions**

<b>Strategy</b>	<b>Specific Interventions</b>
(A) Food security and emergency preparedness	<ul style="list-style-type: none"> <li>• Develop appropriate irrigation schemes for different categories of farmers to ensure production throughout the year</li> <li>• Introduce high-yielding and short-duration crops varieties</li> <li>• Liaise with the Ministry of Transportation for road transport and the Ministry of Harbours and Railways to improve accessibility and facilitate the distribution of crops</li> <li>• Target the vulnerable in agriculture, with special programmes that will enhance their diversification opportunities, reduce risk and enhance their access to productive resources</li> <li>• Strengthen early warning systems and put in place emergency preparedness and disaster management scheme, including the use of weather forecasting to inform farmer decisions</li> </ul>
(B) Increased growth in income and reduced income variability	<ul style="list-style-type: none"> <li>• Support diversification by farmers into tree crops, vegetables, small ruminants and poultry, based on their comparative advantage and needs.</li> <li>• Promote primary grading, and storage to increase value addition and stabilise farm prices</li> <li>• Develop standards and promote good agricultural practises along the value chain (including hygiene, proper use of pesticides, grading, packaging, standardisation), to enhance quality and incomes</li> </ul>

	<ul style="list-style-type: none"> <li>• Promote linkage of smallholder production to industry</li> <li>• Improve accessibility from farm to market centres</li> <li>• Promote formation of viable farmer groups and Farmer-Based Organisations with gender equity, to enhance their knowledge, skills, and access to resources along the value chain, and for stronger bargaining power in marketing</li> <li>• Advocate improved rural infrastructure (transport and communication), and appropriate regulatory environment to enhance private sector investments and participation in delivery of services, including extension</li> </ul>
<p>(C) Increased competitiveness and enhanced integration into domestic and international markets</p>	<ul style="list-style-type: none"> <li>• Encourage partnership between private sector and District Assemblies to develop trade in local and regional markets with improved market infrastructure and sanitary conditions, and enforce standards of good agricultural practises</li> <li>• Encourage the development of commodity brokerage services to support marketing of agricultural produce</li> <li>• Provide comprehensive support of improved access of operators to market information and intelligence, technology, relevant market infrastructure, and financing to enable operators to respond to the changing needs of markets.</li> <li>• Improve supply chain management with emphasis on developing clusters of small to medium-scale farmers and processors to enhance access to technical advice and logistics</li> </ul>
<p>(D) Sustainable management of land and environment</p>	<ul style="list-style-type: none"> <li>• Mainstream sustainable land and environmental management practises in agricultural sector planning and implementation</li> <li>• Create awareness about environmental issues among all stakeholders and develop an effective framework for collaboration with appropriate agencies</li> <li>• Stimulate, support and facilitate adaptation and widespread adoption of farming and land use practises which, while in harmony with natural resource resilience, also underpin viable and</li> </ul>

	sustainable production levels
(E) Science and technology applied in food and agriculture development	<ul style="list-style-type: none"> <li>• Promote demand-driven research</li> <li>• Improve the effectiveness of Research-Extension-Farmer Linkages (RELCS) and integrate the concept into the agricultural research system to increase participation of end users</li> <li>• Ensure sustained funding of research by partnering with the private sector (including farmer groups) and NGOs to identify and adopt innovative approaches to agricultural research funding and commercialisation.</li> </ul>

Source: MOFA, 2009

The main goals of the crop sub-sector development policy are to:

- Enhance an integrated promotion of food, horticultural, and industrial crop;
- Enhance the competitiveness and profitability of crops through access to improved technological packages for increased productivity;
- Ensure sustainable management of environment in crop production systems

Since there's a provision that national level strategies should inspire local level action plans in the implementation of the GPRS II, it will be interesting to compare and contrast the two to verify that provision. In the Ejisu-Juaben municipality, the District Agricultural Development Unit of the municipal directorate of the Ministry of Food and Agriculture is the institution charged with implementing the municipal level plans of GPRS II in promoting agricultural productivity. The work plans are drawn annually for each year, however a synthesised summary of work plan into dominant themes and their main activities and expected outcomes covering the GPRS II period is as summarised in Table 4.2

**Table 4.2 Synthesised Work Plan of the Ejisu-Juaben Municipality on Food Sub-sector Productivity (2006 – 2009)**

Theme	Main Activity	Expected Outcomes
Food security and income generation	<ul style="list-style-type: none"> <li>- Demonstrations</li> <li>- Field days</li> <li>- Fora</li> <li>- Intensify the use of mass communication systems and electronic media for extension delivery (radio programmes, posters, information van, etc)</li> <li>- Identify and train vulnerable groups within communities on entrepreneurial skills</li> <li>- Educate farmers on post harvest technologies with at least 20 farmers constructing storage cribs by Dec 31 annually</li> </ul>	<ul style="list-style-type: none"> <li>- Farmers would be using improved maize varieties that would increase their yields and eventually their income and improved living standards</li> <li>- Farmers would be using correct agrochemicals and proper applications</li> <li>- To support 2% of people falling below extreme poverty line to engage in off-farm livelihood alternatives</li> <li>- To reduce post harvest losses along the maize, rice and cassava by 15%</li> </ul>
Increased competitiveness and enhanced integration into domestic and international market by 15%	<ul style="list-style-type: none"> <li>- Extension agents to carry out market survey</li> <li>- Sensitise farmers to form groups and build groups' capacity to source for market</li> </ul>	<ul style="list-style-type: none"> <li>- An effective system of data collection and dissemination of market trade information developed</li> <li>- Increase the marketed output of non-export smallholder commodities by 50%</li> </ul>

Science and technology applied in food and agriculture	<ul style="list-style-type: none"> <li>- Conduct field demonstrations and field days to enhance adoption of improved technologies</li> </ul>	<ul style="list-style-type: none"> <li>- To improve the adoption of improved technologies by men and women farmers by 25%</li> </ul>
Emergency preparedness and food security	<ul style="list-style-type: none"> <li>- Identify, update and disseminate existing technological packages</li> </ul>	<ul style="list-style-type: none"> <li>- To enhance the adoption of improved technologies by smallholder farmers to increase yields of maize, cassava, and rice by 30% and cowpea by 15%</li> </ul>
Facilitating access to agricultural credit, storage, market and other facilities	<ul style="list-style-type: none"> <li>- Invite rural bank managers to talk to farming communities on relationship between savings and credit acquisition, as well as advantages of paying back bank credits/loans on time</li> <li>- Sensitise farmers on savings, credit management and loan repayment</li> </ul>	
Sustainable management of land and environment	<ul style="list-style-type: none"> <li>- Carry out on-farm demonstrations on appropriate farming practises for maize, rice, cassava and plantain with emphasis on land management</li> </ul>	<ul style="list-style-type: none"> <li>- Sustained use of land and other environmental resources for farming and livelihood activities</li> </ul>

Source: Author (based on analysis and synthesis of 2006, 2007, 2008, and 2009 action plans of Ejisu-Juaben MOFA)

It is worth noting here that the MOFA directorate have chosen only to concentrate on providing technical support to those dry staple crops that are easily storable for longer periods, i.e. rice, maize, cassava, cowpea, and other cash crops like cocoa. Again, the reason cited for this state of affairs was limited financial and logistical constraints to cover all the major crops cultivated in the municipality. Another reason cited was the requirement by each metropolitan, municipal, or district directorate of MOFA to provide technical assistance for crops purchased and stored by the state in its Buffer Stock programme.

Comparing the national strategy to the local level action plan, it becomes obvious that both programmes were aligned on common objectives of productivity enhancement; sustainable land management; expansion of production and market/trade infrastructure. On the conceptual design level, it also appears that the strategies and interventions were consciously or unconsciously developed to incorporate elements of the five productive capital assets discussed in the previous chapters. Thus, a strategy to facilitate modernization of agricultural production for instance is closely linked to physical capital development. In the same way, to facilitate access to agricultural credit, storage market and other facilities also builds on physical capital development. While this can be said about the policy interventions on paper, the important aspect is to identify tangible results *en masse* on how it is translated into sustainable livelihoods of farmers on the ground. For one, continuously and systematically overstating real effects of anti-poverty interventions by some service providers seems to be the norm on the Ghanaian development discourse. Having said this, the purpose for identifying the strategies and specific interventions has been mainly to offer a benchmark against which to assess the impacts of the GPRS II programme, which will be the focus of the proceeding parts of this study.

Another issue which seems to be the norm but highly contended in some instances is the issue of participation. It is widely accepted in development discourse that the state constitutes the lead agency in the development process of any country. It is often the responsible actor for strategic investments in sectors such as agriculture and others. As Grindle (1996) has argued, in order to carry out these and other 3 tasks the state must strengthen its capacity in at least four different areas – institutional capacity, technical capacity, administrative capacity, and political capacity. For this paper's purposes, all these four areas will be summed up as institutional organisation and basis. Although assessing the technical and institutional capacity of the local MOFA directorate determines to a large extent how the GPRS is implemented successfully to achieve desired results, this part will depart and rather concentrate on effective and legitimate channels for societal demand making and civic

engagement by MOFA. It is important that the interventions outlined in the work plan – although conceived through a technical process of identification to conform to central government policy – must meet the real needs of beneficiary farmers on the ground. This can only be ensured through active civic engagement and participation. The discussion will now proceed to assess alignments of the Ejisu-Juaben action plan to concerns of local stakeholders, most importantly the smallholder food crop farmers.

#### ***4.2 Alignment with Stakeholder Concerns***

As stated earlier, the various interventions at the local level under a decentralised arrangement are to be informed by situation-specific issues of that local area's comparative advantage in agricultural produce production and local stakeholder inputs in the form of demands and concerns within the communities. Thus, the sustainable livelihoods framework also stress that the local social and institutional context may be rooted in contextual factors and socio-economic variables such as variances in gender, age, and social group access to productive capital assets, so that interventions are deliberately designed in a participatory manner to respond to specific priorities of beneficiaries (Cahn, 2000). Probably in response to this, action plans for GPRS II activities implementation are developed annually to respond to potential changes in need over time and variations from one community to another. Table 4.3 outlines what the farmers considered to be the main challenge(s) they face in their day-to-day farming activities, when asked individually.

**Table 4.3 Main Challenges in Agricultural Activities in the Communities, Identified Individually**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Adverse bio-climatic conditions	21	20.8	21.0	21.0
Insufficient high-quality land	1	1.0	1.0	22.0
Labour scarcities	3	3.0	3.0	25.0
Economic remoteness	4	4.0	4.0	29.0
Lack of credit	70	69.3	70.0	99.0
Low education and skill level	1	1.0	1.0	100.0
<b>Total</b>	<b>100</b>	<b>99.0</b>	<b>100.0</b>	

Source: Fieldwork returns, 2011

The table shows that a larger percentage of farmers (about 70%) in the municipality identified lack of credit as their main challenge they face in their farming activities. This was followed by adverse bio-climatic conditions, which about 21% of respondents identified as their main challenge. When asked specifically how credit can help them to develop their livelihoods further, many of the farmers were certain that timely delivery and access to very affordable credit can help them to acquire efficient and effective farming implements and hire additional casual labour to expand their farmlands and cultivate more. Due to a situation whereby the concentration of rural banks and “susu”<sup>5</sup> schemes in the municipality is abysmally low, an overwhelming majority of farmers do not have access to formal credit. At best, they rely on small loans from family members and friends as credit sources. However, a small amount of interest-free credit is distributed by the local MOFA directorate to a small selection of farmers. Loan repayments are then lent to new set of farmers and so on in a recurrent manner. Beneficiaries for these loans are selected by resident Agric Extension Agents (AEA) in the various communities based on the farmer’s performance and other set of factors to determine ability to pay back. The farmers complain though that those loans are too small and irregular to rely on for the kind of improvements their desire in their farming activities. It was also

<sup>5</sup> ‘Susu’ is local word for chit funds which are group saving schemes. Members can also borrow from these funds after they have contributed to and/or beyond a certain value and period.



revealed that MOFA has had challenges in credit recovery to continue offering credit to other farmers as some of the beneficiaries defaulted or only paid part.

Only small percentages of farmers cited insufficient high quality land (1%), labour scarcities (3%), and low education and skill level (3%) as their main challenge in their farming activities although other farmers chose a combination of various challenges cited. A probable reason for this is that fertile lands may exist in abundance in the municipality, labour probably abounds but limited in access due to costs, and that farmers may have developed expertise through their personal experience in farming and other technical advice received from agric extension agents (AEAs).

Inferring from the results, it could be argued that the action plans should concentrate largely on facilitating the mass availability and affordable access to secure credit facilities and creating structures and developing the capacity of farmers to resiliently respond to increasing incidences of adverse-bioclimate conditions. This could include training in sustainable land and environmental management, market and weather information available in timely manner, among others. It seems also that facilitating and ensuring the availability of affordable credit to farmers for example could go along to address other challenges such as purchasing efficient organic fertilizer to further improve on farmland quality, hire/purchase and maintain motorised water pumps to ensure all-year production, hire more labour, among others. Comparing this inference to the synthesised work plan of the Ejisu-Juaben MOFA presented in Table 4.2 and superimposing on the national policy framework outlined in Table 4.1, it is visible that the municipality's programme progressively includes interventions concerning many of the challenges faced by farmers on the ground. For instance, to address the issue of credit there are interventions such as inviting rural bank managers to talk to farming communities on relationship between savings and credit acquisition, as well as advantages of paying back bank credits/loans on time and sensitising farmers on savings, credit management and loan repayment. Also, to address challenges related to adverse bio-climate conditions, interventions such as carrying out farm demonstrations to ensure sustained use of land and other environmental resources for farming and livelihood activities. To address low level of education and skill, there are also interventions such as identifying and training vulnerable groups within communities on entrepreneurial skills, educating farmers on post harvest technologies with at least 20 farmers constructing storage cribs by Dec 31 annually, among others.

While the plan on paper may be well-drawn to respond to specific needs of farmer beneficiaries on the ground and to address other pressing developmental problems, it needs to

be properly implemented through appropriate coordination of efforts of various stakeholders, political will and adequate financial and logistical commitment to the course. It is also important that farmers (beneficiaries) are well aware of any such interventions comprehensively and their contextual and personal conditions deliberately incorporated in the process of policy development and implementation through active participation and engagement as theory suggests (Tadese *et al.* 2006). It is interesting at this point to explore the level of knowledge and awareness of local smallholder farmers on Ejisu-Juaben MOFA's activities on the GPRS II policy framework and period.

## **PART 2: Interaction through Participation – Beneficiaries’ Level of Policy Awareness**

The above section has demonstrated that on many levels the work plan of Ejisu-Juaben MOFA consciously or unconsciously correspond to many of the sustainable livelihoods and developmental needs of farmers in the Ejisu-Juaben municipality. However, the ability of Ejisu-Juaben MOFA through the GPRS II interventions to deliver beneficial outcomes of agricultural development and a sustainable livelihood of farmers in the municipality is in peril if the most important stakeholders - the farmers in the various farming communities - are either excluded from the decentralised process of intervention design and implementation or do not represent the true interest of farmers in the municipality. It is therefore necessary to look at the level of interaction – through participation and civic engagement – between the Ejisu-Juaben MOFA and farmers in the municipality. Are farmers (through their representatives) included in the process that aims at improving agricultural productivity and their quality of life? Do they have a real ability to influence decisions? Are farmers operating in a way which suggests that they are really aware of and benefiting from the interventions outlined in the action plans and claimed to be implemented? In the following section, I will begin by exploring the demand side of participation opportunities from farmers – i.e. whether or not farmers are actively able to engage the Ejisu-Juaben MOFA on their own. The supply side of participation will also be examined – i.e. how the local MOFA directorate actively engaged farmers in their activities under the GPRS II umbrella programme. These will then form the basis to assess whether or not farmers are empowered through partnerships and information sharing and working relationships by MOFA to better understand and implement the strategies outlined in the action plan.

### ***4.3 Beneficiary Farmers: Active Participants in Agricultural Productivity and Development of their own Livelihoods?***

Participation of beneficiaries in the design, implementation and execution of anti-poverty interventions enables them to play an active role in the process of owning and sustaining their development path. However, the ability to actively participate in decisions and activities which affect one’s life is influenced by traditional, structural and cultural factors in the ability to demand and supply that meaningful participation.

### **4.3.1 Farmers Participation: The Demand Side**

For purposes of this discussion, participation and empowerment are used interchangeably to encompass shared decision-making mechanisms by both public officials and other concerned stakeholders in the society through two-way deliberative avenues such as workshops, discussion forums, or partnerships. A growing body of knowledge on democracy and service delivery for livelihood security underscores the significance of public participation in providing long-term institutional assurance for the livelihood and dignity of human beings (Tadese *et al*, 2006; Cahn 2000; Brinkerhoff and Crosby 2002). It is not only the existence of public participation in governance that is important, but also the extent and meaningfulness of this participation. This necessitates an elucidation on representative and participatory democracies.

The notion of participatory governance attempts to address the limitations of representative democracy (i.e. limiting participation to a universal franchise) and challenges the conventional understanding of governance as an “exercise of authority and control in a society in relation to the management of its resources for social and economic development” (Schneider, 1999 pp.7). Such an understanding does not recognise the important role that can be played by the public in policy-making and implementation and limits decision making to policy makers and bureaucrats. It implicitly assumes that policy-makers and bureaucrats have the required information and knowledge, that they are fully aware of the needs of the public and are capable of delivering the required public services. On the contrary, experience has shown that those in government do not necessarily have all the information and knowledge needed to provide the services demanded by the public. This results in supply-driven – as opposed to demand-driven – policy formulation and implementation that may not deliver what people need and aspire to.

An important determinant of how beneficiary farmers have been allowed to meaningfully participate in decentralised decision-making processes on interventions in the action plan (and to own the process) to improve their farming activities is how farmers are knowledgeable and operating according to the specific projects and interventions of the municipal action plan. It was possible to estimate knowledge levels of farmers on the GPRS II.

**Table 4.4 GPRS II Knowledge and Awareness**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very high	3	3.0	3.0	3.0
	Only limited knowledge	39	38.6	39.0	42.0
	No knowledge	58	57.4	58.0	100.0
	Total	100	99.0	100.0	

Source: Fieldwork returns (2011)

The table above shows a subjective and qualitative indication of the levels of farmers' knowledge and awareness about roles and provisions in the GPRS II for agricultural productivity and development of farmer's livelihoods. The majority, namely 58% of farmers interviewed indicated that they had no knowledge whatsoever of the GPRS II. This was followed by about 39% of farmers who had very limited knowledge only about the District Agricultural Development Unit in the municipality providing some form of philanthropic support to poor farmers. Only a small fraction of about 3% of farmers interviewed however indicated a high level of awareness and knowledge about government policy on agricultural development outlined in the GPRS II policy document and roles of MOFA in the policy. The results of this finding reveals whopping percentage of the farmers are either completely unaware or have only very limited awareness about the GPRS II itself let alone the interventions in the GPRS II that seek to address issues of their livelihood development. For instance, one farmer narrated that:

*"...I have not heard of any GPRS I let alone the GPRS II. All I know of is that state agric officers come to us from time to time to offer some technical advice to us but we have not been told whether it's all part of a GPRS II programme. I do my farming work pretty much on my own without really conforming to any laid down vision of the government on agricultural productivity (Field interview, 2011).*

Another set of response was that:

*“...I’ve heard about it but do not know what it is about. I heard about it through the radio not so long ago. If you hadn’t told me that there were interventions specifically targeted at us (farmers), I did not know such provisions existed. I mean if anyone wishes to engage another, I think it is only prudent that the second party is made fully aware about that engagement in order for that engagement to fully achieve its intended results”.* (Field interview, 2011)

Reasons for this state of development were varied and complex. Simply put, they included the fact that many farmers lacked the knowledge of the operations of the decentralised systems of decision-making to make their voices heard and acted upon in critical decisions that affect their farming livelihoods. Other challenges are the fact that many of the farmers practise “hand to mouth” (largely subsistence smallholder) farming, meaning that they cannot afford to leave their laborious farming activities and actively participate in the process because they may be losing their daily bread and income. Another factor could be the general situation of low level of education among farmers in the municipality. Arguably, higher levels of education may broaden ones horizon and empower a person where necessary to confidently seek what they are entitled to as citizens; “a group must be able to collect and process information that will reinforce its position, and it must be able to present that information in an accessible manner to the appropriate people. To know whom to present information to implies a solid grasp of the workings of the policy process” (Brinkerhoff and Crosby 2002: 77). It will be interesting to compare educational status of sampled farmers in the municipality to their level of awareness and knowledge of provisions for development of their livelihoods in the GPRS II programme at this stage.

**Table 4.5 Education Status of Household head \* GPRS II Knowledge and Awareness Crosstabulation**

			GPRS II knowledge and awareness (%)			Total
			Very high	Only limited knowledge	No knowledge	
<b>Education status of household head</b>	Never been to school	Count % within GPRS II knowledge and awareness	0	10	20	30
	Primary school	Count % within GPRS II knowledge and awareness	0	13	21	34
	Junior high school	Count % within GPRS II knowledge and awareness	1	12	16	29
	Technical/vocational	Count % within GPRS II knowledge and awareness	2	4	1	7
<b>Total</b>	Count % within GPRS II knowledge and awareness	3	39	58	100	

Source: Fieldwork returns, (2011)

The table reveals interesting findings about a crude relationship between level of education attainment of farmers and their state of awareness and knowledge about the GPRS II. Among farmers who have never had formal education before constituting about 30% of the sample frame, none rated their level of knowledge of the GPRS II to be very high. About 10% farmers within the sample frame falling in this category indicated they had only limited knowledge while 20% had no knowledge at all.

With respect to the category of farmers with educational attainment up to the primary school level (constituting 34% of sample frame), none had very high knowledge of the GPRS II. About 13% had only very limited knowledge and 21% had no knowledge or awareness at

all. Similarly, only about 1% out of the 29% of farmers falling within the Junior High School category indicated very high level of knowledge about the GPRS II while 12% indicated only limited knowledge and 16% narrated they had no knowledge at all. Again, of the only 7% of farmers who have had technical/vocational education, 2% had very high knowledge, 4% had only limited knowledge, and 1% had no knowledge at all. None of the respondents had education up to the tertiary level.

Inferring from the table, it could be seen that the relative degree of how high a farmer's educational attainment is corresponds to his/her level of knowledge and awareness about the GPRS II. The only 3% of farmers who indicated higher level of knowledge about the GPRS II had relatively higher educational attainment up to the Junior High School and Technical/Vocational levels respectively. All things being equal, because they are literate and integrated into national life, they are more likely to be aware of provisions in the GPRS II for agricultural productivity and make conscious efforts to access those provisions through their local MOFA directorate. They could get this knowledge from media sources (radio, TV, newspaper). Also, higher educational status may serve to broaden one's horizon and to seek currency in contemporary development issues in one's society, like the inception of the GPRS II, and its implications on their lives. On the other hand, higher proportions of respondents indicating only limited knowledge or no knowledge of the GPRS II either had no formal educational attainment at all or had only up to primary school level, and in some cases junior high school. What is interesting though despite of claims by government agencies about periodic mass broadcasting using information vans and other means to inform community members about the GPRS II, many of the farmers indicated poor levels of awareness and knowledge about the programme. Another problematic issue hindering farmers in the various communities in accessing meaningful participation opportunities and influencing the municipal level GPRS II intervention plans to their full advantage is that they are not well organized into strong groups to network among each other, share information and skills, and engage the local MOFA directorate as a collective unit. Personal observations in the communities seemed to suggest that the level of reciprocal social trust among farmers, especially when it came to matters concerning finances was very low, and this adds up to the low level of social capital development among farmers in the municipality. Hence, there is not free flow of information and organisation by those few farmers who may have the requisite knowledge about how to engage the local directorate of MOFA to the best of development of farmers' livelihoods. It is also discernible that despite traditions of extended family support and helping each other communally, farmers showed little interest in working collectively on



issues or projects that do not have concrete individual benefits in the short-run, which disclosed lots of very personal information, or required group sharing, or where a lot of collaboration would be required before they could reap the fruits individually. Staffs at the local MOFA directorate have described how many efforts by the directorate to get smallholder farmers to organise themselves into groups to access credit from rural banks and other financial institutions have proved futile. Some reasons allocated to this have included instances in the past where other members of the groups have defaulted repayment and its effects on the other members who were forced to pay what the other defaulters have not paid. These situations discussed above coupled with the careful observations revealed that the farmers in the communities are not proactive in demanding that MOFA provides avenues for them to actively participate in decision-making systems.

Even for those few who have actually had opportunities to participate in some sort in decision-making processes with MOFA, they claim the will to participate is no more there mainly because in the few times that they have participated, their interests have not been catered for so they see no reason to attempt to participate any more. Having found this, it will be interesting at this point to explore the supply side of participation by Ejisu-Juaben MOFA to bring on board farmers' specific concerns in their technical processes of prioritizing interventions.

#### **4.3.2 Roles of MOFA: The Supply Side of Participation**

Successful service delivery for agricultural productivity and sustainable development of farmers' livelihoods also depends on the extent to which the Ejisu-Juaben municipal directorate of MOFA strengthen their capacity, both to deliver the public services to farmers in the municipality and to ensure meaningful public participation by the farmers through genuine representation in the policy design and implementation processes.

Thus, there must be conscious efforts by lead agencies in participatory governance systems to empower people, with information, knowledge, and organisation and the material and financial resources they require to actively take part in decisions around policy-making and implementation (Brinkerhoff and Crosby 2002). By the theoretical basis of this arrangement on paper, and what Ghana as a country supposedly practises, government institutions are to play a crucial and positive role in this empowerment by "creating space" (i.e. civil liberties and institutional mechanisms) to facilitate effective design of policies, fair distribution of public services, and its [sustainable] implementation through increased

involvement of all and sundry, especially those stakeholders whose lives are directly or indirectly affected by those decisions. But the situation in reality does not smoothly follow this ideal.

Information obtained through observations and results from semi-structured interviews with the Municipal Director and the farmers in the municipality seem to suggest the process of deciding who participates and what to include in this consultation process to be a mainly top-down one, where there was very little regard and opportunities for majority of the smallholder farmers in the municipality to influence the policy process. It was assumed that through consultations, trainings and demonstrations with a few selected relatively successful farmers from the various communities, dominant concerns of smallholder farmers in the wider municipality at the grassroots level will be brought up to the attention of the designers and implementers of the policy and addressed, but unfortunately this was not the case. This resulted in a situation where although some form of participation opportunities may be extended to a few farmers and those farmers may access technical advice and other forms of assistance from the Ejisu-Juaben MOFA, majority of farmers cannot access. The consensus among many of the smallholder farmers was that they suspected it was the few well-to-do medium to larger scale farmers who might have been included in the process. Unsurprisingly, the broad consensus among farmers was that they had no idea it was within their constitutional rights to actively engage the local MOFA directorate nor the organisational ability and skill to do so. It is interesting to explore how opportunities are provided to farmers to participate in project activities with the aim of ensuring that farmers have accurate knowledge and operate in line with the interventions and targets set in the GPRS II programme on agricultural development in the municipality. The Municipal Director had this to say;

*“In fact we are mandated by the tenets of the GPRS II itself to design specific solutions and interventions that match the needs of our municipality and in so doing we need the views of all. We try as much as possible to involve a few key (hard working) farmers in our decision-making processes, but this is not always the case. There are some (hard working and successful) farmers who are almost always regular in our decision-making activities, and at times some concerned farmers do come to our offices to discuss issues with us. Already we have very limited financial resources, and so we are unable to synthesise and implement the*

*many concerns we receive from farmers. We can only accommodate a few.”*  
(Field interview, 2011).

This seems to be in agreement with Brinkerhoff and Crosby’s (2002) observations in “Citizen Participation in the Policy Process”, that in many developing and transition democracies, there may be well formulated participatory governance structures on paper but in reality there is a general lack of “processing capacity” mainly on the part of institutions that are to supply genuine citizenry participation authorities. For instance, in objective terms it could be seen that expertise and skills to manage citizen input, to separate legitimate demands from special interest pleading, and to weigh the quality of proposed alternatives may be questionable or lacking. This may mean that many legitimate demands and concerns of majority of smallholder farmers will not receive adequate attention and/or simply ignored, or that they may not have access to appropriately simplified technical information at the right time to enable them equitably access the provisions and interventions outlined in the action plans for agricultural productivity and sustainable livelihoods development. Therefore, it is especially critical that participatory governance mechanisms and structures are not dominated by only small groups or individuals – whether deliberately or not – who may not speak for the wider group of farmers so that people from all walks of life, levels of income and education must be encouraged and supported to participate. When asked about their relationship with Ejisu-Juaben MOFA and whether invitations are extended to them to participate in MOFA’s decision-making processes and on what terms the participation takes place, if any, one farmer’s account which resounds with what a majority of farmers said was that;

*“For me, apart from my knowledge that the MOFA people assign to us Extension Agents to offer technical advice, I have not had any opportunity to go to their office let alone interact with anyone there over any issue”* (Field interview, 2011)

These assertions seem to imply that the local MOFA directorate tend to look at communities as mere recipients of government services without the potential and information to improve local decision-making processes. Given a general situation of low literacy rates among many farmers in the municipality, they might not be aware of participatory provisions and so it may be assumed that MOFA could voluntarily invite as many farmers as possible to deliberate on issues. But this is not the case. As a result, majority of farmers in the various farming communities are not aware of how agricultural productivity decisions outlined in the action

plans are made and what role they can play in the process to ensure they structure their farming activities to take full advantage of interventions in the action plan. Even for the very few farmers who have had some levels of direct consultations with the local MOFA directorate, they complain they are losing their quest to seek participation opportunities mainly because in the few times they have enjoyed some participation – however small – their priorities and concerns have not been catered for so they see no reason to participate.

Farmers' participation and access to extension services was another critical factor. Given limited resources for extension, the local MOFA directorate has adopted a strategy predicated on training a cadre of key farmers in each village to diffuse agricultural techniques. Under these conditions, it is natural to select the most enthusiastic and willing trainees, as these figures are more likely to be effective extension agents. In doing so, however, MOFA not only escapes directly training the more hesitant, 'laggard' (as some are referred to by extension agents), or struggling farmers, but also misses the opportunity to learn about the constraints facing those farmers. As the director of the local MOFA office commented to me, "we tell our staff to look to the potential, to focus on, engage with, and learn from, successful participants and successful examples of their work, rather than dwelling on difficult or intractable issues." Whilst this might generally appear to be a good operational strategy, it becomes problematic if it results in field staffs systematically escaping healthy confrontation with challenges to their model. The latter is actually the case in the municipality. This over-exposure to a self-selected group of willing participants creates an artificial sense of achievement.

Staff at the local MOFA directorate also make a case that they at times use the information van concept – using vans to mass broadcast to communities on thematic issues – to broaden awareness about the GPRS II and its priority areas and interventions in the municipality. While these, and other methods of information dissemination in the municipality may be laudable, it is important to note that participatory governance mechanisms of public service delivery is not limited to ways of collecting information on public needs and aspirations, nor as channels for information provision on government plans and accomplishments. Whereas making final policy decisions fall within the domain of appointed and elected officials based on their professional and electoral mandate respectively, meaningful participation of smallholder farmers in policy processes that affect their lives should be acknowledged, respected and valued. In any case, mechanisms that ensure meaningful participation actually, I believe, will enhance the capacity of the Ejisu-Juaben

MOFA to deliver appropriate services and further reduce the need for people to react negatively or have negative perceptions or act in apathy to activities of MOFA.

#### ***4.4 Implications of Demand and Supply of Participation in Municipal Level Decision-Making for Agricultural Productivity: Farmers' Empowerment?***

Having looked at the demand and supply sides of participation of farmers, it is prudent to now focus on a discussion of whether or not farmers are knowledgeable and operating according to the specific projects and interventions of the municipality's work plan for agricultural productivity. It is now evident that the Ejisu-Juaben MOFA directorate has a key role to play in farmers' knowledge base to effectively adopt and respond to the projects and interventions in the work plan through, for instance, partnerships and information sharing and working relationships to better understand and implement the strategies outlined in the action plan.

Some staff at MOFA were asked about how farmers are trained to adopt and respond to interventions outlined in the action plan:

*"We make conscious efforts to get on board views and concerns of the farmers in the municipality. Of course it is unrealistic to bring all the farmers in the municipality, literally, to tell us their concerns. But through consultations with a few, we are able to get an idea of what to concentrate on to meet farmers needs. Then we organise workshops, forums, on-farm demonstrations, information vans, and use radio stations to spread the word about our activities and train farmers to practise the interventions. With on-farm demonstrations especially, we usually select farms which are closer to a road where many farmers use, with the hope that those farmers can see the improved changes on those farms and ask to be directed how they were done." (Field interview, 2011).*

It proved difficult, however, for many farmers to offer positive affirmation to this assertion by staff at MOFA. While a small number of farmers felt reasonably capacitated through trainings and demonstrations they have received on new techniques and varieties of crops from Agricultural Extension Agents of MOFA, majority did not express optimism in MOFA's ability to empower them to know more about GPRS II programme and its benefits, let alone expecting their capacity to be developed by MOFA staff to structure their farming activities to access the interventions in the action plan. For instance, many farmers had very little or no knowledge on how to approach MOFA and its staff for any assistance they may need nor had

they the foresight to concentrate on particular crops or to organise themselves in ways that may make it easier to directly engage the local MOFA directorate and access provisions in the action plans. It is possible to discern from this finding that majority of farmers at the grassroots level in the municipality do not perceive the MOFA as a conduit between them and receiving governmental support in their farming activities or an institution they can channel their views and concerns to for redress as they perform a very important function of ensuring food security in the country.

As the findings in the supply side of farmers' participation by MOFA has shown, although planning processes and needs assessment to identify and implement interventions in the action plan involved some degree of consultation and participation of concerned farmers, the process has mainly been top-down. Input of farmers in the process is very little. Methods of disseminating information about the programme are very limited in reach. For instance, many of the farmers are illiterate and just disseminating information by information vans or radio may not be enough for them to fully comprehend the programme and what it is about. There may need to be two-way communication processes between farmers and the MOFA for them to adequately understand what the programme is about. This has also contributed to the situation where many farmers are even unaware of municipal level interventions to promote accelerated growth in agricultural productivity and development of farmers' livelihoods.

While it is plausible to identify the challenge with the MOFA with respect to lack of participation for smallholder farmers to structure farming activities and organise themselves to access the interventions in the action plans, cultural orientation and organisation of smallholder farmers need not be over-looked. In the communities, findings show that though there are traditions for mutual help and gathering around common values, distrust and fear of being exploited by others in joint activities hampers the processes of participation in collective bargaining and ownership of resources. Meanwhile, the mechanisms for participation and the inherent social norms and traditions of genuine collective action and bargaining have an impact on the creation and the strength of social capital in the communities.

Social capital has the potential of generating collective effort among people to achieve development goals (Collier, 1998), such as smallholder farmers groups' collective action to engage with the Ejisu-Juaben MOFA directorate in order to meaningfully access the benefits of interventions outlined in the action plans.

From the discussion above, the conclusion is that the level of capacity development of smallholder farmers by MOFA through extension of consultative engagement and meaningful

participation opportunities during the GPRS II implementation period has been low. This notwithstanding, problematic issues of cultural outlook and educational horizon of smallholder farmers in the municipality are also hampering a large-scale process of smallholder farmers acquiring currency in contemporary development interventions such as the GPRS II and to seek participation, in civil manners, in decision-making processes that affect their livelihoods.

## **PART 3: LOCAL ENVIRONMENTAL AND SOCIO-ECONOMIC WORKING CONDITIONS FOR SMALLHOLDER FARMERS**

This part assesses conditions such as local climatic characteristics and working environments within which smallholder farmers in the municipality operate, answering research question number four – *what are the environmental and working conditions of the farmers in the municipality? Have the farmers experienced any change(s) in these conditions, and if yes, how do they cope with these changes?* It is impossible in this study to experimentally prove the occurrence of climate change in the study area. However, inference of the occurrence of climate change using scientific means is made from climatic data on precipitation and temperature from a randomly selected year and climate scenarios for 2020, 2050, and 2080 developed by the Ghana Meteorological Services. A participatory rural appraisal was then conducted to determine the possible effects of climatic change in terms of economic and social implications; such as farm yields, income, and effects on quality of life. The aim is to ascertain at first-hand whether or not farmers adversely experience unaccustomed climatic variations and to investigate other challenges farmers face and how they cope with and/or adapt to such challenges. These findings and discussions will then offer a scope to analyse the resilience of contemporary livelihood strategies of smallholder farmers in the context of those environmental and livelihood dynamics.

### ***4.5 Local Environmental Conditions***

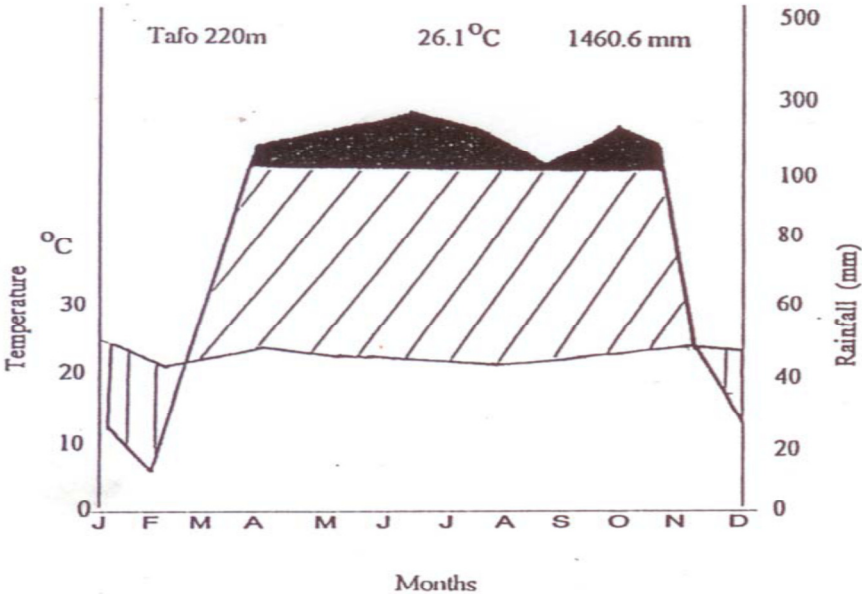
Farming is a human activity which depends very much on natural capital obtained from environmental resources such as soil nutrients in arable land, rainfall and other water resources, appropriate temperatures, and humidity, among others. Thus, there's a strong positive correlation between the state of environmental resources on which farming activities rely on and how resilient or vulnerable a farming-dependent livelihood, especially a smallholder one relying on natural systems, may be. Agricultural productivity has been found to be affected by climate change and since such changes cause response in many human and natural systems, understanding climate variability, especially by farmers, will improve agricultural decision making and eventually productivity.

Ghana has 10 regions which fall within six agro-ecological zones - they are the Rain Forest, semi-Deciduous Forest, Coastal Savanna, Forest/Savanna Transition, Guinea Savanna and Sudan Savanna. This study focuses on the Ejisu-Juaben municipality in the Ashanti Region which lies in the semi-deciduous forest agro-ecological zone. Under the Netherlands Climate Change Studies Assistance Programme (NCCSAP), the Meteorological Services



Department (MSD) of Ghana has developed Climate Change (temperature and rainfall) scenarios for the semi-deciduous forest and evergreen rainforest zones of Ghana using process-based methods that rely on the General Circulation Models (GCM) in conjunction with Simple Climate Models (SCM) (Anim-Kwapong and Frimpong, 2006). Daily values of the climatic variables from the MSD were used to compute their monthly means for a 30-year period (1971-2000). This was used to define the baseline climatic variables from which the projected values of rainfall and temperature were estimated from 2020 to 2080. The results indicated that projected mean annual rainfall values in the semi deciduous forest zone of Ghana will decline by -2.8, -10.9 and -18.6% in year 2020, 2050 and 2080 respectively. In the evergreen rainforest forest zone, mean annual rainfall will also decline by -3.1, -12.1 and -20.2% respectively. Mean annual temperature changes will rise by 0.8, 2.5 and 5.4 and 0.6, 2.0 and 3.9 degree celsius respectively in the semi deciduous and evergreen rainforest zones in 2020, 2050 and 2080 respectively. These projected climatic changes are gradually on-going and reported to exacerbate soil moisture conditions during the dry season (November to March) and aggravate the vulnerability of crop production to adverse climatic changes. A climatic diagram constructed for Tafo amply describes the climatic conditions in the semi-deciduous rainforest belt of Ghana (Fig. 4.1).

**Figure 4.1 Climatic diagram from 30 years data from the Cocoa Research Institute of Ghana (CRIG) weather station, Tafo**



Source: Cocoa Research Institute of Ghana, 2006

Production of the main crops grown in the municipality – i.e. maize, plantain, cocoyam, cassava, among others – is highly susceptible to drought and the pattern of cropping of those crops is related to rainfall distribution. The annual total rainfall in the rain forest and semi-deciduous regions of Ghana is less than 2000mm. The rainfall distribution pattern is bi-modal from April to July and September to November. There is a short dry period from July to August during which the relative humidity is still high with over cast weather conditions. There is a main dry season from November to February-March. The four to six months of dry weather results in soil water deficit since irrigation forms only a very small part of the local farming system. Considering the results of the NCCSAP study, since many of the main crops cultivated by farmers in the municipality (eg. maize, plantain, cassava, rice, cocoyam, yam, cocoa, oil palm, citrus, pepper) are sensitive to drought and rising temperatures in terms of growth and yield<sup>6</sup>, it is reasonable to anticipate consistent decrease in output in the future unless effective irrigation methods is complemented with naturally occurring rainfall so that farmers could cope with and adapt to future adverse climatic changes.

The perception of the rural farmers was sought on climate stressors and how they adapt to such stressors. The rationale for this is premised on the theory that perception influences behavior and attitudes.

#### **4.5.1 Local Knowledge and Perceptions on Climate Change**

Indigenous people in rural communities may not understand the science of climate change but they may rightly observe and feel its effects, if it happens at all (Gyampoh, *et al.* 2008). This is true in the context of smallholder farmers in the Ejisu-Juaben municipality because they live close to the natural resources, and have immense knowledge of their micro-environment. Those farmers also observe the activities around them and are first to identify any changes and perhaps adapt to them and understand very well changes in time and seasons through their traditional knowledge.

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<sup>6</sup> According to Sagoe (2006), root crop plants are more strongly affected by the direct effects of increased atmospheric CO<sub>2</sub>. Increased CO<sub>2</sub> alters the physical structures and the carbon/nitrogen balance in plants which in turn alters the plant's growth rate, yield, susceptibility to pest attack, and susceptibility to water stress. For example, using projected climate scenarios and the crop model CROPSIM-cassava and CROPGRO (ARGRO980)-tanier, Sagoe (2006) found that yields of root and tuber crops such as yam, cassava and cocoyam is expected to reduce with the rate of reduction increasing with time or rise in temperature and solar radiation. For instance, cassava productivity or yields were expected to reduce by 3%, 13.5% and 53% in 2020, 2050 and 2080 respectively. Percent reductions in cocoyam productivity were 11.8%, 29.6% and 68% in 2020, 2050 and 2080 respectively.

Farmers in the municipality were asked if they have experienced any changes(s) in physical climatic conditions in which they work over the past 10 years.

**Table 4.6 Local Perceptions on Incidence of Climate Variability**

**Local Perceptions on Incidence of Climate Variability Over the Past Ten Years**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Yes	79	79.0	79.0	79.0
No	21	21.0	21.0	100.0
Total	100	100.0	100.0	

Source: Fieldwork returns, 2011

Respondents were asked to indicate whether or not they have experienced observable forms of climate variability over the past ten years in simple “yes” or “no” terms (see question 12 in *appendix 2*). From the table above, it is observable that as much as about 79% of the farmers indicated “yes” whilst only about 21% indicated “no”. This result implies that there is some form of consensus among the farmers that climatic conditions (rainfall pattern, temperature distribution, humidity, etc) that they are accustomed to in their mainly rain-fed farming activities have changed and keep on changing. This primary account also seems to conform to the conclusions of the aforementioned scientific investigation under the Netherlands Climate Change Studies Assistance Programme (NCCSAP) about falling mean annual rainfall levels and rising mean annual temperature levels in the semi-deciduous forest region of Ghana (where the Ejisu-Juaben municipality is located) over the years. Respondents who indicated “yes” were further probed to indicate specifically what those observed forms on climate variability relate to. The results are summarised in Table 4.7.

**Table 4.7 Local Perceptions on Climate Variability**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low rainfall	14	14.0	17.7	17.7
	High rainfall	3	3.0	3.8	21.5
	Change/instability of climate patterns	48	48.0	60.8	82.3
	High temperature	6	6.0	7.6	89.9
	Prolonged dry season	8	8.0	10.1	100.0
	Total	79	79.0	100.0	
Missing		21	21.0		
Total		100	100.0		

Source: Fieldwork returns, 2011

Table 4.7 summarises responses of 79 farmers who have observed recent climate variability adversely affecting their farming activities and were asked to specifically provide what those observed climatic variability related to. It is seen from the table that 14 farmers representing 17.1% indicated low rainfall whilst 3 farmers representing 3.8% noted high rainfall. As much as 48 farmers, representing about 60.8% reported change in and instability of climate patterns and only 6 farmers constituting about 7.6% indicated high rainfall. 8 farmers, constituting 10.1% however indicated prolonged dry season. These findings imply that the main manifestation of climate variability affecting farmers in the municipality has to do with instability of and changes in expected climatic patterns which farmers are accustomed and have developed resilience to over the years. This is not to downplay the other manifestations which other farmers indicated but in any case observed incidences of instability of and change in expected natural climate patterns could encompass intermittent incidences of undesirably low or high rainfall, high temperatures, prolonged dry season, or a combination of these. It is interesting to explore why 21 of the farmers indicated “no” and for that matter not any observed changes in climatic variability. Some of the farmers in this group, although admitting the changes around them, attributed it to other factors other than climate change, such as a sinful generation, wrath of God, signs of the end of life, etc. Though majority of the people believed that some activities of humans have contributed to the current changes and can do something about it, others felt it was an act of God and hence nothing they can do about it.

Asked about how these incidences affect farming activities, many farmers (about 68 of the total 79) were of the view that those changes are either shifting their land preparation and planting season later thereby losing some already short production season of the year, or there's growing uncertainty/unpredictability of weather patterns affecting production decisions, or loss of soil quality (for instance compacted or muddy land) and subsequent loss of crop plants due to too little or too much rainfall. Thus, this state of events has resulted in years of either boom or bust with little in between. In particular, this stress on the system has increased risks associated with rain-fed cultivation, which has resulted in significant impacts on the provision of livelihood opportunities in farming. There were also reported cases of the few streams in some of the communities drying up gradually as a result of very high temperatures and low rainfall.

**Photo 2: Local stream which is gradually drying up, according to residents**



Source: Author, 2011

The situation has been compounded by the fact that some farmers in a position to afford purchasing or hiring mechanised pumping machines are sourcing water from those streams and rivers, thereby contributing to their gradual drying up. However, many local residents also indicated that the rivers and streams become filled to their banks after the rains set in. Because the farmers rely mainly on rainfall, the culmination of these changes is a decline in productivity and incomes for the farmers. Agricultural Extension Agents in the farming

communities seemed to have confirmed this finding on how climatic variability is affecting farmers. One had this to say;

*“Whilst some few crops have stable genotypes and therefore do not react to variation in environmental changes, others are excessively stressed with slight changes in climate. The main environmental stress factors affecting root and tuber crops in this municipality are drought, water logging, temperature extremes, solar radiation extremes which could all result in nutrient imbalance. So yes, we could say that there are some incidences of climate variability which is adversely affecting farmers here”* (Field interview, 2011).

With the knowledge on this analysis in mind, one may naturally expect that real interventions by the local MOFA directorate should also focus on helping smallholder farmers to develop cost effective and technologically appropriate systems that enhance their ability to cope with and/or adapt to such challenges relating to climate variability that smallholder farmers in the municipality are confronted with.

**4.6 Local Socio-Economic Working Conditions**

There are important socio-economic conditions which have significant ramifications on the work of smallholder farmers in the municipality. Participatory diagnostic tools such as informal semi-structured and formal structured surveys based on individual interviews, key informant interviews, and group interviews of randomly selected farmers and other stakeholders were used to describe and comprehend the realities of farming systems, aside issues related to climate variability, and households in the study area. This was done to ascertain the vulnerability of farmers to prevailing (negative) conditions of work and strategies adopted to ensure livelihoods. Results of demographic information obtained from the structured interviews conducted in the 10 farming communities in the municipality are shown in tables 4.8 to 4.10

**Table 4.8 Gender of Farmers Interviewed (Household Head)**

		Frequency	Percent	Cumulative Percent
Valid	Male	73	73.0	73.0
	Female	27	27.0	100.0
	Total	100	100.0	

Source: Fieldwork returns, 2011

**Table 4.9 Age Structure of Farmers Interviewed**

		Frequency	Percent	Cumulative Percent
Valid	20 - 30 yrs	9	9.0	9.0
	31 - 40 yrs	19	19.0	28.0
	41 - 50 yrs	28	28.0	56.0
	51 - 60 yrs	38	38.0	94.0
	Above 60 yrs	6	6.0	100.0
	Total	100	100.0	

Source: Fieldwork returns, 2011

**Table 4.10 Education Level of Farmers Interviewed**

		Frequency	Percent	Cumulative Percent
Valid	Never been to school	28	28.0	28.0
	Primary school	32	32.0	60.0
	Junior high school	27	27.0	87.0
	Technical/vocational	13	13.0	100.0
	Total	100	100.0	

Source: Fieldwork returns, 2011

Data was collected to assess those socio-economic conditions, and could be generally categorised into the following;

- Labour
  1. Household structure
  2. Labour available
  3. Labour use profile
- Capital
  1. Inventory- principal tools and equipment use
  2. Income- major sources of income- on and off-farm
- Credit- availability of credit for farming activities
- Land
  1. Farmland fertility
  2. Size of farm, number of parcels, area under cultivation

- Production levels- including food crop yields and producer prices of food crops

#### 4.6.1 Labour

Like in many developing countries, smallholder farming relies primarily on rudimentary implements such as cutlasses, hoes, and among others for cultivating the land. As such, farming becomes very labour intensive using this system. How readily available labour is, all things being equal, in desirable quantity and quality to the farmer is one of the strong determinants affecting the productivity of smallholder farmers using rudimentary methods. Sampled farmers were asked through structured interviews to disclose the composition of their workforce.

**Table 4.11 Farmers' Workforce Composition**

	Frequency	Percent	Cumulative Percent
Valid Work alone	25	25.0	25.0
Work with household members	56	56.0	81.0
Hire casual labour	19	19.0	100.0
Total	100	100.0	

Source: Fieldwork returns, 2011

According to Table 4.11, about 25% of sampled farmers interviewed work on their farms alone. Whilst about 56% of the farmers work on their farms with help from their household members, only about 19% indicated that they hire casual labour to assist with work on their farms. From these findings, it is observable many farmers do not prefer hiring casual labour but either work alone or seek assistance from household members on their farms. Although most of the farmers expressed the desire to hire casual labour to assist them work on larger tracts of land, they complained that they cannot afford to hire casual labour as the cost has been escalating. For instance, farmers have to pay casual labourers at least GH¢5 (*read 5 Ghana Cedis, equivalent to about US\$4*) for a day's work, which many smallholder farmers consider as expensive. Even for the few farmers who hired casual labourers, they explained that they could only afford to hire them a few times in a long while, for instance when harvest and sales for a particular season was very good.



High cost of labour to the farmers have also meant that many farmers are unable to expand their farms to cultivate more even though many of the farmers claimed there's readily available arable land around for expansion of their farms when possible. It could further be inferred that the relatively high cost of labour is an adverse situation in working conditions of farmers in the municipality. Judging from this analysis, if productivity of smallholder farmers were to go higher enough and to commensurate with higher incomes, they could then afford to hire extra hands in the quantity that they desire to expand their farms for larger farm output and incomes. This arrangement could also ensure that additional regular jobs are created for those labourers so that massive unemployment in rural communities is reduced and to promote rural development.

Interestingly, Table 4.9 also shows that over 44% of smallholder farmers in the survey areas in the municipality are currently over 50 years old, and very likely that they are unwilling to take extra risk in investing in yield improvement strategies due to the high cost of inputs relative to their incomes from food crop farming. The increasing age of farmers imposes a constraint. As farmers become less able, the ability to contribute to labour-intensive work on their farms is diminished. The poor availability and affordability of inputs also requires farmers to adopt more labour intensive techniques. As the farmer's age restricts his/her ability to carry out more demanding tasks he/she is confronted with the choice of employing relatively expensive hired labour or simply doing less of the tasks.

#### **4.6.2 Capital**

To assess the capital status of farmers in the municipality as part of exploring farmers' working conditions, I made a rough inventory of the principal tools and equipments used by the farmers as well as probing into their major sources of income – on and off-farm. As has been revealed in section 4.5.1, the majority of smallholder farmers in the municipality use rudimentary farming inputs and techniques primarily because they cannot afford to buy other effective and efficient farming inputs on the market. The market for farm inputs in Ghana is wholly privatised and devoid of government subsidy so that prices for those inputs are determined by market forces of supply and demand. This has produced a situation where only a few farmers purchase and apply appropriate inputs such as organic fertilisers, tractors, and others to make farming more efficient.

Farmers' incomes go a long way in their ability to affordably access those farming inputs to make their farming activities more productive and efficient. In many cases, incomes

earned by smallholder farmers exclusively from farming are little. Thus, farmers were also asked about their sources of income aside farming. This is documented in Table 4.12

**Table 4.12 Other Sources of Farmers’ Income**

		Frequency	Percent	Cumulative Percent
Valid	Remittances	12	12.0	12.0
	Labourer	52	52.0	64.0
	Trading	36	36.0	100.0
	Total	100	100.0	

Source: Fieldwork returns, 2011

Table 4.12 summarises other income sources of sampled farmers interviewed with an aim to explore farmers’ income diversification status. From the table, about 12% of respondents rely on remittances in the form of cash and gifts sent by family members not living with the household. About 52% are also casual labourers who do jobs such as weeding, cleaning, masonry, carpentry, among others. Also, 36% of the respondents engage in trading, mainly in food stuffs at markets, for income diversification. These results prove that generally, smallholder farmers do not entirely rely on income from their farming activities to meet their needs and wants. When asked if combining these other non-farm livelihood options to incomes from their farming activities was enough to guarantee them their immediate needs and wants, the general consensus among the farmers was that they have just enough for survival and that they have had to forego many other wants and needs such as farming inputs and other facilities such as improved housing, schooling amenities for their wards, remittances to family members, a pension plan, among others, which in their view makes life easier. A general idea of sampled smallholder farmers’ annual income from solely farming activities, covering the GPRS II period (i.e. from 2006 – 2009) is summarised in Table 4.13

**Table 4.13 Income Groups of Interviewed Farmers**

Income Groups (in GH¢) <sup>7</sup>	Year			
	2006	2007	2008	2009
90 and below	13	4	7	9
Between 91 and 200	22	27	36	21
Between 201 and 500	39	29	25	33
Between 501 and 800	12	12	7	24
Between 801 and 1000	4	8	10	5
Between 1001 and 1500	4	9	7	4
More than 1501	6	11	8	4

Source: Fieldwork returns, 2011

It is observable from the table that for the entire GPRS II period, majority of farmers earned around and between the second, third, and fourth income groups per annum, which could be considered relatively small compared to incomes in other sectors of the Ghanaian economy and the rate of inflation and cost of living in general. A few farmers however have annual incomes at or below the official poverty line in Ghana, which is around GH¢90<sup>8</sup>. Such farmers are those with the smallest tracts of land on which the crops grown are mainly highly perishable crops like vegetables and other root crops which they are forced to sell to market women (traders) for very low prices. While farmers in this category are willing to cultivate more of other crops which fetch higher incomes, such as cash crops like oil palm and cocoa, they have not the capital to acquire bigger lands and other farming inputs to do so. At that income category, such farmers are considered extremely poor. An interesting finding however was that many of those farmers falling in the extremely poor income category were ‘cushioned’ by generous assistances from family members and other members of the communities in cash and/or kind. This shows that there is some form of social cohesion among community members which could be further tapped into to sustainably develop social capital in the communities for knowledge sharing, information dissemination, and group

<sup>7</sup> GH¢1.41 is equivalent to US\$1.00 as at December 7, 2010

<sup>8</sup> Two official poverty lines have been established in Ghana 1999 price. One is the food poverty line, or extreme poverty line at GH¢(cedis)70 per adult equivalent per year, which indicates that at this level, even if a household devotes 100 percent of its expenditure to food, it still cannot supply sufficient calories to its household members. Taking account of the need for non-food expenditures, an upper poverty line is set at GH¢(cedis) 90 per adult equivalent per year (IMF, 2005)

ventures. A few farmers are however relatively successful with annual incomes between GH¢801 and GH¢1500 and upwards. Mostly, farmers in this income group work on larger land and cultivate food crops such as cassava, plantain, maize, vegetables and cash crops such as cocoa, cowpea, and oil palm, often employing some form of hired labour.

Results from the structured interviewing also showed that incomes of farmers kept fluctuating yearly, and many farmers attributed this issue to a situation which could be linked to climate variability. Specifically, they indicated that rainfall patterns over the past ten years have been unstable and that a year with good rainfall was accompanied by good growth and yield of farm crops, thereby fetching more income. They also indicated that excessive rainfall was accompanied by high incidence of plant diseases such as black pod disease on cocoa farms as well as yield losses just as drought conditions also gave rise to poor, and thereby lower incomes.

Other forms of capital critical to the farmer is tools, machinery, and other inputs like tractors, harvesters, etc. which enhance efficiency and effectiveness of farming. Agricultural production in the municipality, especially by smallholders, is little touched by mechanization. Rudimentary methods used by majority of farmers limit their ability to work on larger tracts of land.

Also, outputs of farmers have not been effectively integrated into the local agro-processing industry for regularised and stable markets and income. Farmers are tasked to seek buyers themselves, majority of whom are the traders (market women) who offer very little prices. This finding directly prove a similar indication by Aryeetey (2007) from a macro-level analysis of smallholder farming in Ghana that there is no pull from the modern industrial sector for outputs of smallholders and no or very weak link between the traditional agricultural sector and the market. This implies that the Ghanaian agro-industrial sector sought inputs largely from importations and smaller proportions from a few large local plantations. However, a few farmers also are linked to poultry producers in the municipality for supply of yellow corn, for instance. As observations indicated that such farmers had relatively higher incomes, sustained efforts by the local MOFA directorate into large scale integration of farmers' output into the local agro-industrial sector could guarantee better incomes and more capital for farmers for re-investment into their farming ventures.

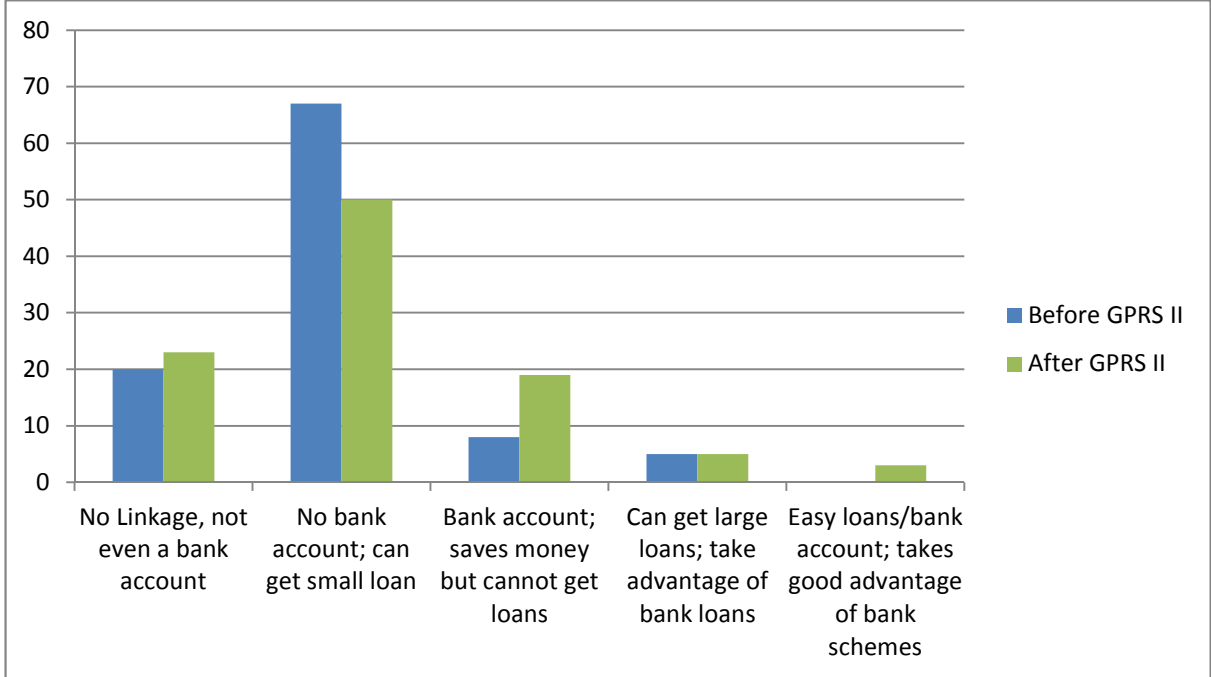
#### **4.6.3 Credit**

One of the most pressing issues many farmers, especially smallholders, in developing countries are confronted with is availability and access to formal credit. Availability of credit facilities in easily accessible and affordable terms and amounting to what farmers need is a

strong determinant of, among others, increasing farm lands, hiring more labour, obtaining effective and efficient farming inputs, and increased agricultural productivity.

Using the LAST sheet (see *appendix 2*), the sampled farmers were asked if they received any form of credit facilities from government or private bank sources.

**Figure 4.2 Access of Farmers to Credit Before and After GPRS II Inception**



Source: Fieldwork returns, 2011

Figure 4.2 illustrates a general idea about proportion of smallholder farmers who had access to credit or not, either through government sources or private banks. The figure reveals that the majority of farmers have had no bank accounts but are able to obtain small loans from family members and other community associates. These loans are usually insignificant to contribute to major improvements in on-farm productivity (such as buying farm inputs and hiring more labour) and are sometimes used to offset some household costs of the farmers, such as paying school fees and buying other household essentials. While a sizeable proportion of sampled farmers had no linkage to any banks or other sources of credit, only a few have bank accounts where they save money but cannot access loans from those banks. The results show that proportion of farmers with bank accounts increased slightly after GPRS II inception, implying that their productivity could have been increased for higher incomes and to save part of their incomes in banks where they *could* obtain loans from. But to have an account with a bank is one thing, to qualify for loans from that bank is another. Asked about why they were unable to obtain loans from banks they save, farmers cited the issue of banks

demanding for a relatively higher amount of balance in their account, saleable property or other forms of collateral, and/or savings for a certain number of years with the bank before the farmers can qualify for credit facilities. Unfortunately, many of the farmers are lacking in those set criteria for qualification for loans from banks, and so are unable to obtain such facilities from the banks. Consensus among farmers with no linkages to banks is that their incomes are so small that almost all is devoted to meeting farming and household needs and wants, with very little or none left to be saved at all.

On the other hand, a very small but stable proportion of farmers could get large bank loans sometimes the right amount they require but with some difficulties such as longer loan processing times or obtaining only a fraction of the loans they need or high costs of borrowing. When this happens, those farmers are unable to get the loans they require for the farming business at the right time, thereby affecting farmers' ability to use those effectively and pay back promptly. On a positive note, though there is vast room for improvement, a very small number of sampled farmers are now able to take very good advantage of their savings at banks to obtain relatively large loans fairly easily at the right time and are able to pay back promptly. Farmers in this category comprised mainly of those with larger tracts of land and with higher incomes from the cultivation of both food crops and cash crops like cocoa, oil palm and cowpea. They are able to obtain loans quicker and at the right time for their farming business primarily because they have now developed relationships of trust with the banks based on their ability to not only document how profitable a use those loans are going to be put to but also pay back the credit with interest promptly. Some however complained that as a result of increasing production cost and falling prices of some of their farm produce, bank loans are becoming increasingly expensive to pay back. When asked what could be done to salvage the situation, the consensus was that cost of borrowing for farmers should be regulated by government in consultation with the banks on terms that are affordable enough for farmers. These findings seem comparable to a survey by the Ministry of Local Government and Rural Development (2006) that most (about 88%) farmers in the Ejisu-Juaben municipality finance their farming activities through personal savings while 3% obtain moneys from money lenders. The remaining 9% obtain theirs through family members. The situation gives an idea of the number of farmers having access to credit. From that survey, it was also realized that majority (87.2%) of the farmers do not have access to credit.

A survey of the municipality revealed that only two banks were operating in the whole municipality; the Juaben Rural Bank and the Ghana Commercial Bank. In terms of coverage of these banks, the Juaben Rural Bank has only two branches located in Juaben and Ejisu (the

municipal capital) whilst the Ghana Commercial Bank has only one branch at Ejisu serving the whole municipality. This could be one of the factors explaining why majority of farmers, who typically live in farming communities distant from these two major towns in the municipality, do not save with banks. There are no chit funds in the form of group saving schemes providers, locally called “susu”, in the entire municipality for farmers to save part of their incomes for future uses or to guarantee loans from such funds. The locals however indicated that such savings schemes operated by private individuals existed in the past but some community members were duped, hence the unwillingness of locals and inability of group savings providers to operate in the municipality.

An opportunity smallholder farmers could explore to obtain larger loans from banks for their farming activities was to form associations and use them as guarantees for loans. While majority of farmers in the municipality knew about this and had attempted it too through advocacy of an NGO operating in the municipality, endeavours at forming associations for group loans collapsed because in instances past when some members of those associations defaulted in their repayment and even run away, a few remaining members were burdened to cover the costs for those defaulters. This has partially resulted in a situation where farmers in the municipality generally do not trust each other when it comes to group accessing and repayment of formal credit.

#### **4.6.4 Land**

The survey revealed that farm sizes are generally small ranging from about 0.5 to 10 hectares with an average farm size of about 3.2 hectares for smallholder farmers in the municipality. Though many smallholder farmers are introduced to hybrid crop varieties, crop yields are generally low at an average of between 6.1 and 8 tons per hectare.

It has been observed that there is a minimum farm size which sustains farmer interest in commercialised farming and the requisite investment in labour and other resources such as farming inputs for a viable economic enterprise (Ghana Cocoa Board (COCOBOD), 1998). When farm sizes are small like those observed in the present survey, among others, farmers are not encouraged to invest in inputs since the ultimate income in this context is limited by farm size. This is because farm size directly and indirectly influences yields. Currently, a basket of cassava for instance sells for not more GH¢2.00. As stated earlier, pricing of many food crops is not standardised through use of any means of unit of measurement but farmers negotiate for prices with intermediary traders (market women) who then sell them to consumers. When there's a bumper harvest for particular crops in a particular farming season,

prices of those crops drop drastically on the market. Even when there's no bumper harvest, pricing negotiations between farmers and market women usually go to the undue advantage of the latter. Therefore, average gross incomes from food crop cultivation are quite low. Hence, food crop farming in the municipality is a low input venture undertaken on small farms using rudimentary technology with very little purchased input. A socio-economic survey in 2006 revealed, for instance, that about 81.2% of farmers in the municipality cultivated less than 10 acres of land, and this reflects the existing low output levels as well as impedes efforts to commercialise production (Ministry of Local Government and Rural Development, 2006). Meanwhile, farmers need more capital to be able increase their farm lands to increase yields, all things being equal. The farmers have sought to improve their incomes through diverse activities, but it is however apparent that the majority of farmers still derives over 50% of their incomes from crops cultivation. As many farmers reveal that there's enough arable land, the challenge is to facilitate the process of farmers acquiring larger lands and affordable labour and other effective and efficient farm inputs to enable them cultivate more land.

Sustainable management of land for farming is another important issue affecting farmers' livelihoods in the municipality. A farmland survey revealed that many of lands under cultivation in the municipality have been farmed on continuously for not less than ten (10) years, with others in constant use for up to 30 years because they have been handed in from one generation to the other. Fallow period for lands have reduced drastically largely in response to high demand for food and hardships forcing farmers to harvest and sell farm produce quickly for income. Inputs such as more effective organic fertilisers and manures on the market are considered expensive by many of the farmers, and so many farmlands are little touched by such fertilisers to replenish soil nutrients. Other farmers however resort to animal dung to revitalise the soil. Compounded with the problem of recurring soil compaction and water logging of soils through climate variability, fertility of farmlands in the municipality generally is fast deteriorating. Sustainable land management has been one of the main priorities in the municipality's action plan on agricultural productivity. While efforts such as on-farm demonstrations and technical advisory services like extension advice on planting of soil nutrient enriching plants on farms (eg. leguminous plants for nitrogen fixation) and other land management methods have been offered to farmers, penetration to as many farmers for more widespread effects have been very low.

Land ownership is another issue of import which affects farmers' incentives or otherwise to sustainably manage land resources for long-term increased agricultural productivity. An interesting finding was that about 24% of farmers interviewed did not own



their farmlands outright. Of this 24%, about a third was farming on lands given to them by landowners (who usually reside in the bigger towns) in return for a portion of farm produce harvested every farming season. The remaining two-thirds cultivated on lands allocated to groups of farmers by village chiefs and/or family heads on a ‘cultivate-and-let’s-share-the-proceeds’ basis. This arrangement is locally known as “*do ma yen kye*”, which literally translates into “weed and let’s share”. The trend was that farmers who did not own their land generally were adamant to commit more resources into sustainable land management.

#### **4.6.5 Production levels – Including Crop Yields and Producer Prices of Crops**

Prices which farmers receive for their commodities also affect the amount of attention and production levels farmers work to achieve. Especially in organised crop sectors such as cocoa, rice, and maize (which are storable for longer periods and easily exportable) there are standard processes of setting producer prices based on a combination of factors such as estimation of the farmer’s cost of production, anticipated exchange rates, rates of inflation, and an explicit duty determined by the government’s revenue needs, among others. The way in which farmers respond to price is complex. While the smallholder farmers may not understand the concept of real prices, they are aware of the relative escalation of other prices in relation to the crops they produce. This is particularly true of input cost (including labour costs) and essential food and domestic fuel costs.

However, highly perishable crops such as plantain, cassava, cocoyam, and vegetables which have no standard pricing regime present a different case. In most cases, farmers have to sell these crops to traders (market women) for very low prices who in turn sell to consumers at relatively higher prices, corresponding to profit margins of up to five to ten times the rate that the farmers sold to them;

*“We (farmers) are being cheated very much by these market women. We toil to produce and to convey the produce to them only to be told that this or that produce is now very abundant on the market and thus cheap or that consumers are not willing to pay above a certain threshold for them. The situation is as if the market women connive to only offer certain prices because from one market women to the next, you’ll almost certainly get that same price, if not slightly lower or higher. Here in the village, we cannot sell to households because almost every household has a farm, and we cannot afford the finances and time involved in carting goods to urban centres to sell too. On many occasions, there’s very little*

*we can do because if we don't sell the produce early enough, they will become unwholesome for consumption. I therefore do not cultivate certain crops at all or only very little during certain seasons” (Field interview, 2011).*

The situation is even worse when there are bumper harvests for certain crops. Prices farmers receive go so low as a result of the abundance on the market that many farmers decide not to devote any land to cultivation of those crops or incur greater losses for selling those crops at very low prices. Farmers complain that activities of those middlemen market traders are not helping to receive higher incomes to make ends adequately meet. For instance, although as many as 68.2% of the populace of the Ejisu-Juaben municipality are employed in the agricultural sector, they receive only 30.1% of incomes in the municipality while industry and services sector receive 32.6% and 37.3% respectively (Ministry of Local Government and Rural Development, 2006). It should also be noted that low prices and the disincentive to farmers to produce certain crops also create artificial shortages of certain crops, which affects food security.

Asked about what could be done to reverse this situation, the consensus among the smallholder farmers was that the government bring representatives of concerned stakeholders together to decide on proper pricing of food crops based on weighing on scales for reasonable prices that farmers will not feel cheated. A proposed plan by a former Minister of Food and Agriculture to introduce the system of pricing food crops based on weighing scales have been abandoned because of the inability to break the long-existing tradition of ad-hoc pricing of food crops between farmers and market traders, often to the undue advantage of the traders.

#### ***4.7 Livelihood Adaptation Assessment***

Having explored the (vulnerable) conditions under which smallholder farmers in the Ejisu-Juaben municipality work, this section will delve into how farmers cope with and/or adapt to such conditions, which are adversely changing. Referring back to the theory, livelihoods of the farmers are sustainable when it can cope with and recover from stress, maintain or enhance their capacities and productive assets, while not undermining the natural resource base (Carney, 1998). This assessment relied heavily on processes involved in collecting information to measure the Livelihoods Assets Status Tracking (LAST) status of smallholder farming households (see *appendix 2*). Thus, this section aims to describe, comprehend and

ascertain the strategies adopted to ensure livelihoods' resilience vis-à-vis vulnerability of farmers to prevailing negative working conditions.

#### **4.7.1 Local Adaptation to Climate Variability**

The emerging evidence of climate change, coupled with increased climate variability is a real concern for the sustainable development of agriculture, especially in many African countries where agriculture is still directly dependent on climate, since rainfall, heat, and sunlight are the main drivers of crop growth. In the context of those environmental dynamics identified in section 4.4, farmers were asked how they coped with and/or adapt to that context.

In adapting farming systems to cope with climate variability issues such as inadequate rainfalls and reduced water quantity, many farmers have resorted to rainwater harvesting, stream water rationing, and construction of wells and boreholes. Some farmers have also individually shifted their planting seasons backwards or forward according to how late or early the rains set in for a particular year. They take these decisions through a complicated traditional knowledge process studying amount, intensity, and duration of rainfall when the rains begin to set in. This finding seem to confirm a proposition by Waters (1974) that the adaptation technology of African small-hold farming is immensely complex, and that environmental adversity and limited inputs have trained many farmers to be efficient managers of their own production processes. Thus, apart from recognising that the small-scale farmer has limited quantities of land, labour, tools, and highly dependent on nature, we must also be aware that he faces an environment of frightening uncertainty, and that his very survival may depend upon the timing and combination of his few resources in relation to these surroundings(Yengoh *et al.* 2010).

Adams (2009) also notes that the livelihoods of people in high-risk or highly variable environments ought to exhibit considerable self-reliance and flexibility, as well as a high degree of careful adaptation to cope with changing local environ-institutional conditions within and between years. In developing coping systems to adapt to incidences of crop failure and loss of income also, refined indigenous knowledge acquired over the years are also applied in selecting and concentrating more on cultivation of crops which are relatively better able to withstand rapid climatic variability. Other strategies along this line has included the introduction and planting of new drought resistant and higher yielding varieties. However, some farmers complained that a drought-resistant variety of cassava introduced to them, for example, do not taste as good as their indigenous varieties, and so has had negative

repercussions on the larger-scale adoption of that variety of cassava by farmers. Still on indigenous knowledge in developing coping strategies, other uses have been weather predictions to decide when and when not to plant and harvest certain crop varieties. The other coping strategies are replanting of failed farms after the onset of relatively good weather conditions, remittances from relations and personal savings to offset (some) costs of crop failure, and other economic ventures such trading. It is important to stress here that because the majority of farmers receive no form of formal credit or other social protection subsidies from government sources, remittances remains one of the most vital avenues for smallholder farmers to acquire some capital to both invest in their farming activities and adapt to vulnerabilities they encounter in their high-risk farming systems.

The above results show that farmers' means of livelihood reflected wide ranging 'reactive' but not 'anticipatory' coping strategies (Burton, et al 2002). The fact is coping strategies of farmers denote *short-term* reactive responses which often is unable to effectively mitigate climate vulnerabilities because change is only introduced in response to the onset of the impacts that will re-occur. However, indigenous knowledge gained over the years about changing climate conditions have enabled majority of farmers in the municipality to also develop some form of the rather more effective anticipatory coping strategies where they adjust their farming systems before the impacts take place.

On a policy level, information was sought from the local MOFA directorate on what measures, through the GPRS II, were put in place to ensure that farmers in the municipality are able to cope with and/or adapt to climate change. The response was that Agricultural Extension Agents in the various communities had been trained to interact and work with farmers on a case-by-case basis to identify pressing challenges farmers face with changing climate patterns and suggest workable solutions on sustainable land and environmental management. For instance, this included helping farmers to plant more trees on their farms and in their homes and disseminating information on planting and land management methods to prevent erosion and rapid soil nutrient depletion. Surprisingly, there was no local properly equipped meteorological facility in the municipality to communicate more reliable weather forecasts to farmers considering the fact that the predominant economic activity in the whole municipality is farming. Innovatively, farmers who could afford purchased or hired mechanised pumping machines to collect water from nearby streams and rivers to irrigate their farms for all-year farming.

Other policy level strategies have been the distribution and introduction of drought resistant and high yielding varieties of crops to some farmers. The problem here is that only

drought resistant varieties of cassava have been distributed freely or at very low prices to farmers, implying that varieties for other critically important crops such as maize and rice are obtainable from private sources and are expensive in relation to farmers' income. A challenge cited by staff at the local MOFA directorate is the delay in release of funds from the government to pursue their interventions of reducing vulnerabilities of smallholder farmers to climate variability. At times bureaucratic process results in situations where funds are released so late that the damages are already created and the purpose for which those funds were released is no longer a priority to farmers and/or the local MOFA directorate. Another challenge cited by MOFA is that some of the farmers are 'laggards', explaining that whilst some are not open to incorporating new ideas, others are not working harder to practise technical advice offered them. However, from farmers' views on the assertions made above and observation about the farmers' enthusiasm to work, it is discernible that lack of funds and an inconsistency on the part of the local MOFA directorate in delivering some of the most critical needs of smallholder farmers in climate adaptation is impeding the process of enabling farmers to effectively address climate variability vulnerabilities.

Also, given the very low income of most farmers, the low motivation to further invest in their farming venture and the lack of formal credit, it is apparent that most farmers cannot adopt recommended practices to mitigate the impacts of climate change on crop production and hence their high level of vulnerability to climate change effects. Added to this, there have been no insurance products on the market for farmers; neither has MOFA made any attempt in the past to link farmers onto insurance products to insure them against the vagaries of the weather and other risks until a very recent report in the year 2010 in the Ghanaian media about MOFA currently working with stakeholders to secure insurance for farmers. This plan, although outside the domain and period of the GPRS II programme and supported by the World Bank, European Union and the Ghana Insurance Commission, is said to build the capacity of Ghanaian insurance institutions by providing them with the knowledge and skills required to design, price, and implement agricultural index-based weather insurance programmes. When farmers are insured, they could be made to pay reasonably priced and affordable premiums and when their crops fail as a result of bad weather, for instance, they will be adequately compensated by the insurance companies.

#### **4.7.2 Local Adaptation to Adversely Changing Socio-Economic Work Conditions**

Present state of production levels (including crop yields and producer prices of crops), land, capital, labour, and credit were identified as the main socio-economic indicators of conditions of work which have significant ramifications on the productivity of smallholder farmers in the municipality. It has also been revealed generally that smallholder farmers in the municipality are experiencing, or have experienced, adversely changing trends in prices, land, capital, labour, and credit resources which affect their livelihoods. For their livelihoods to be sustainable however, they need to be able to cope with and recover from those stresses and shocks while maintaining or enhancing their capacities and productive assets (Carney, 1998)

Results from interviews revealed that the ability to, and for how long one can cope or adapt to those adversely changing socio-economic trends depends on the resources available to the farmers. For instance, land tenure was found to be vital to adaptation as landowners tend to adopt new land management techniques quickly than tenants, an argument that has justified numerous efforts to reduce tenure insecurity.

In those adversely changing local socio-economic work conditions, local farmers are forced to innovate ways to adapt such as application of easily available animal droppings in place of organic fertilisers on the market, seeking loans from family members and friends, reliance on land tenure system by farmers who do not own land, intensification of farming on fertile lands especially during favourable farming seasons, and hiring more labour (where affordable) to manually work on larger lands. An interesting observation about a general Ghanaian tradition of relying on extended family and friends for support in times of need was that it served as some form of ‘cultural buffer’ against shocks that confront smallholder farmers in the day-to-day farming activities.

Other measures have included diversifying crops to include those with relatively higher prices on the market, use of mechanised water pumps to supply water by farmers who can afford. However, many of these indigenous self-help adaption measures with very little or no direct support from the government have proved inadequate in enhancing farmers’ ability to resiliently and sustainably adapt. Asked about what form of assistance they require most to be able to sustainably adapt to identified adverse conditions of work, interviewed farmers unanimously indicated the provision of easily accessible and affordable credit facilities. Access to affordable credit increases financial resources of farmers and their ability to meet transaction costs associated with various adaptation measures such as application of organic

and inorganic fertilisers to increase soil fertility, accessing water pumps to supply year-round water for farming, purchase seeds of improved crop varieties, among others.

Thus, given the very low income of most farmers, the low motivation to further invest in their farming venture and the lack of formal credit, it is apparent that most farmers cannot adopt recommended technical practices to mitigate the impacts of climate change, for instance, on food crop production and hence lead to a high level of vulnerability.

# PART 4: Monitoring Overall Impact: Productive Capital Assets of Smallholder Farmers

Having explored the institutional and vulnerability context in the previous parts of this chapter, this section concentrates on an assessment of the status of livelihood capital assets endowment of farming households in the study area. This is done by employing an adapted methodology of the Livelihood Asset Status Tracking (LAST) framework which is intended to measure the changes in five capital asset groups – physical, financial, natural, human, and social capital – prior and after the inception of the GPRS II as a proxy for assessing impact on farmers’ livelihoods in the study area.

## 4.8 Livelihood Asset Status Tracking Assessment

LAST assessment employs a multidimensional method of measuring livelihoods and human development. As it has been discussed earlier, the asset – financial, physical, human, natural, and social capital assets – status of the poor is fundamental to understanding the options open to them, the strategies they adopt to attain livelihoods, the outcomes they aspire to and the vulnerability context under which they operate (Ellis, 2000). It is possible to determine the asset status of farmers using an adapted LAST methodology. The LAST methodology has been widely used by academics such as Scoones (1998) and by international development organisations such as the UK Department for International Development.

The equation for the adapted methodology is represented in equation 1.

$$\sum \frac{Y_1+Y_2+\dots+n}{M} \dots\dots\dots 1$$

From equation 1, Y is the percentile score of responses for each of the elements (indicators) comprising the capital asset of households up to the n<sup>th</sup> last response score for a capital asset. The summation of response scores divided by the “Perfect Summation” – M – provides the LAST index for each of the households. Specific LAST index formula incorporating unique indicators for each of the capital assets is presented in *appendix 1*.

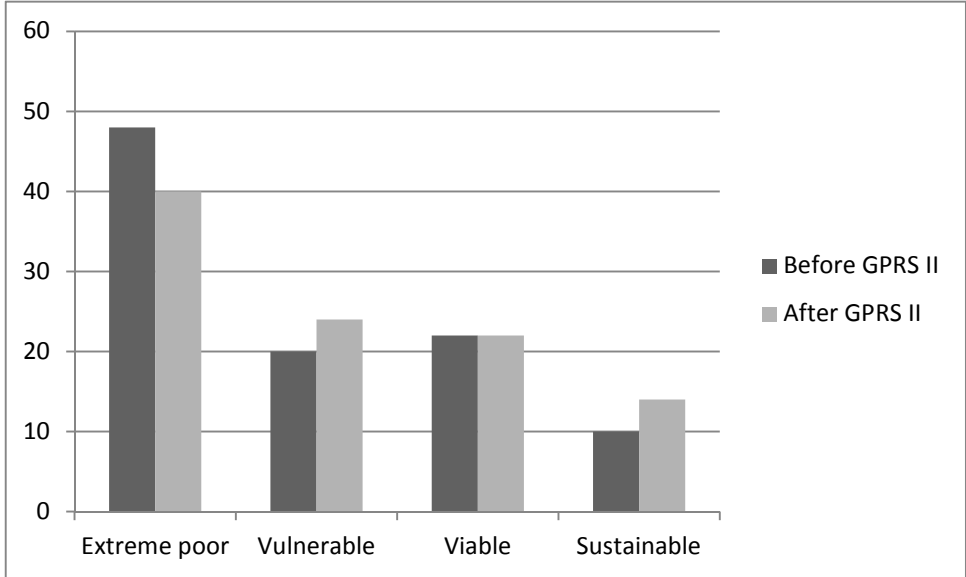
It is interesting to analyse the status of farmers on each of the individual capital assets development, from which an aggregated categorisation based on a combined LAST index score of all capital assets for each household will be made to obtain a general idea of vulnerability or resilience level of famers’ livelihoods in the study area.



### 4.8.1 Natural Capital

As farming is a natural resource-based activity, availability and access to natural capital for farmers is important for helping build better livelihoods, resilience and to reduce vulnerability. Through the participatory processes of identifying locally meaningful indicators (see *appendix 1*) for the capital asset assessments, natural capital in this context consisted of land size and corresponding production levels, water and other natural resources such as pasture, and biodiversity. The productivity of these resources may be degraded or improved by human management both on the part of farmers themselves and/or the local MOFA directorate and other concerned stakeholders. Figure 4.3 shows the percentage categorisation of sampled farmers into extreme poor, vulnerable, viable, and sustainable before and after GPRS II inception for natural capital development.

**Figure 4.3 Natural Capital Development Status of Interviewed Farmers**



Source: Fieldwork returns, 2011

From figure 4.3, while about 48% of farmers were extremely poor in natural capital development before the GPRS II, the figure reduced to 40% after GPRS II inception. Also, about 20% of farmers were in the vulnerable category before GPRS II whereas the aftermath of the GPRS II saw an increase in the figure to 24%. For the viable category, proportion of farmers remained the same at 22% before and after the inception of the GPRS II. Lastly, only 10% of farmers were considered to have sustainable natural capital development before the GPRS II, which increased to about 14% after the inception of the GPRS II.

It is observable from these results that the majority of farmers have very low natural capital development status given the fact that many farmers still are extremely poor in their

natural capital status. However, a few farmers were able to transit from extreme poor to vulnerable and from vulnerable to sustainable. Further investigations revealed that the few farmers who constituted this category were actually those farmers who had inherited larger tracts of highly arable land in the recent past, so inflated their score on the LAST sheet for farm plot sizes and quality of plot for farming. This is because in the municipality's context, access to, ownership of, and size of arable land is a key element of achieving sustainable livelihoods as there existed a positive correlation between land ownership, land size, and farmers' incomes. Table 4.14 summarises farmers' land sizes, corresponding annual income levels, and number of farmers in each of the land size-income level cross tabulations.

**Table 4.14: Farmers' Land Sizes and Annual Income Levels**

Farmers' Land Size	Number of Farmers in Annual Income Groups						
	GH¢90 and below	Between GH¢91 and GH¢200	Between GH¢201 and GH¢500	Between GH¢501 and GH¢800	Between GH¢801 and GH¢1000	Between GH¢1001 and GH¢1500	More than GH¢1501
Less than 1.2 hectares	3	12	-	-	-	-	-
Between 1.2 and 5 hectares	-	9	21	4	-	-	-
Between 5 and 10 hectares	-	-	7	17	3	-	-
Between 10 and 20	-	-	-	-	8	3	2
Over 20 hectares	-	-	-	-	-	4	7

Source: Fieldwork returns (2011)

Table 4.14 shows the relationship between farmers' land sizes and their corresponding annual income levels during the GPRS II period. It could be seen that the few number of farmers who had relatively higher annual incomes of GH¢800 or more had farm sizes ranging from 10 to 20 hectares or larger whereas farmers with relatively lower incomes had smaller sizes of farmland, ranging from 1.2 to 5 hectares. This also implies that, among others, those farmers with larger farmlands are able to grow more produce for more income provided there is availability of labour and other necessary farming inputs. Interestingly, interviews with the farmers also revealed that majority of the farmers with larger farmlands actually owned the land outright through inheritance and/or purchase, and were in a better position to invest time and other resources in maintaining the farmlands' quality over longer periods.

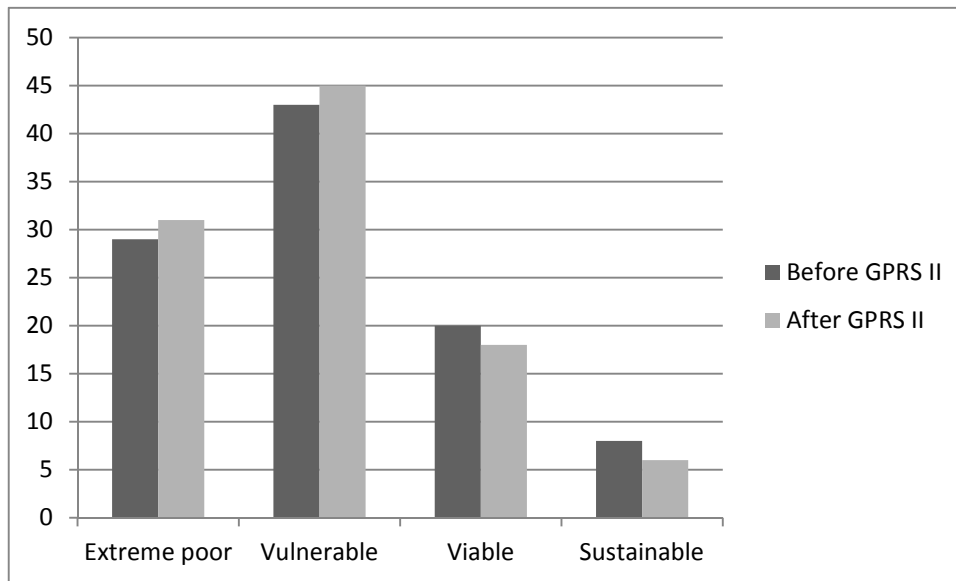
Another explanatory factor which suggests there existed a positive correlation between land ownership, land size, and farmers' incomes was the issue of land tenure and costs. A socio-economic survey in 2006 revealed, for instance, that about 81.2% of farmers in the municipality cultivated less than 10 acres of land, and this reflects the existing low output levels as well as impedes efforts to commercialise production (Ministry of Local Government and Rural Development, 2006). Costs of land have been 'sky-rocketing' due mainly to land-use interests from developers and their willingness to pay more. Added to this, poor farmers who are able to acquire land through tenure arrangements only acquire very small units, often less than 1.2 hectares. Other resources such as irrigated water for farming is poorly developed to the extent that the only irrigation facility in the entire municipality is that constructed by a Chinese farming company for a rice farming project before they left in 2006.

The effects of these conditions is that many poor farmers often loose in the power play for ownership and use of such valuable assets as land for expanding their farming activities. Additionally, some farmers, especially those who inherited land, also lay claim to their land customarily without any formal document to claim legal ownership. There had been reported instances where some developers had some farmers ejected from their farmlands because such land had been sold to them with the proper documentations either by an elder of the village or a landowner who resides in urban centres.

#### **4.8.2 Financial Capital**

Based on the participatory processes of identifying locally meaningful indicators for the assessment, financial capital consists of stocks of money or other savings in liquid form such as insurance policies, income levels and variability over time, access to credit, and debt levels. Using the LAST index, it was possible to categorise sampled farmers based on their financial capital asset development status.

**Figure 4.4 Financial Capital Development Status of Interviewed Farmers**



Source: Fieldwork returns, 2011

From figure 4.4, about 29% of farmers were extremely poor in financial capital development before the GPRS II, and increased slightly to 31% after GPRS II inception. This implied improvement stems mainly from some relative increases in productivity and income levels especially by those farmers who were able to access extension services and seeds of new improved crop varieties. Also, about 43% of farmers were in the vulnerable category before GPRS II whereas the aftermath of the GPRS II saw an increase in the figure to 45%. This increase could be accounted for by the transition of farmers who were hitherto in the extreme poor category before the GPRS II into the vulnerable category after the GPRS II. For the viable category, proportion of farmers was about 20% before GPRS II while it reduced to about 18% after the inception of the GPRS II. Lastly, only 8% of farmers were considered to have sustainable financial capital development before the GPRS II, which decreased to about 6% after the inception of the GPRS II. It is seen that financial capital development status of farmers in the relatively well-to-do viable and sustainable categories fell in proportion after the GPRS II. This could be attributed to the fact that many farmers in those categories complained of increasing costs of inputs (such as labour) and production, higher dependency from having to cater for large families, and falling prices their bumper agricultural produce are fetching on the market.

The latter issue is even more interesting as general prices for particular crops reduce drastically on the market whenever there is abundance of that product on the market. However, many farmers have devised mechanisms such as only harvesting strategic quantities

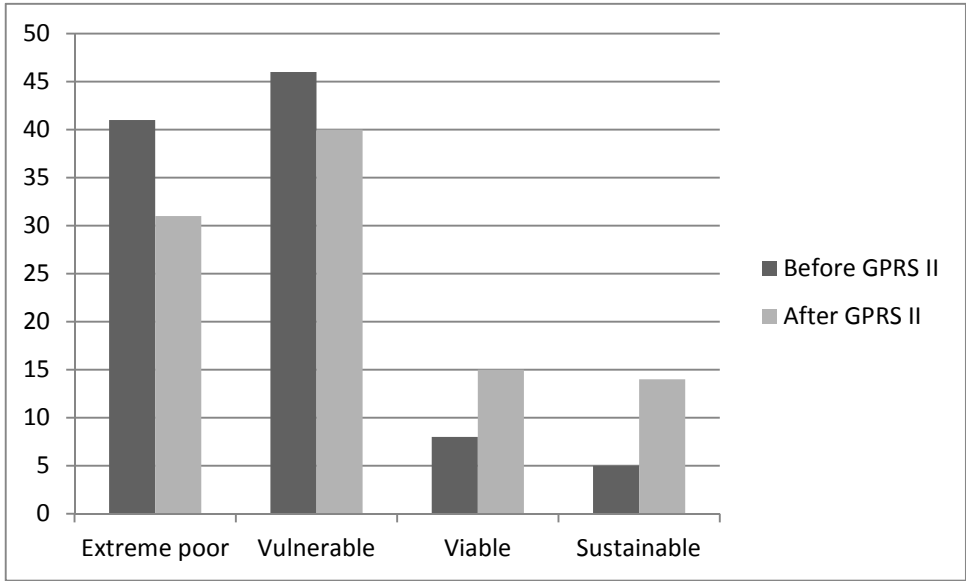
of certain crops such as oil palm such that there are no abundance on the market to be forced to sell them at very low prices. Therefore, when asked to comment on the stability and sufficiency of their incomes in terms of adequately meeting household and farming expenditures, farmers in those categories complained that their current income from farming is just enough to meet very basic needs. In smallholder systems highly susceptible to vulnerabilities such as low prices and low productivity, financial capital in the form of cash is severely constrained; cash received is soon allocated and spent (Mortimore 1998), with very little or none left to re-invest into the farming venture. A comparison of incomes of various sectors of the Ejisu-Juaben economy reveal, for instance, that although as many as 68.2% of the population are employed in the agricultural sector, they received only 30.1% of incomes in the municipality while industry and services sector receive 32.6% and 37.3% respectively (Ministry of Local Government and Rural Development, 2006).

The generally low income status of farmers in the municipality also reinforces the dire situation where farmers are unable to obtain adequate credit and capital to improve their farming operations and meet their pressing needs and wants sufficiently. A survey by the Ministry of Local Government and Rural Development (2006), for instance, concludes that most (about 88%) farmers in the Ejisu-Juaben municipality finance their farming activities through personal savings while 3% obtain moneys from money lenders. The remaining 9% obtain finances through family members. The situation gives an idea of the number of farmers having access to credit. From that survey, it was also realized that majority (87.2%) of the farmers do not have access to credit.

#### **4.8.3 Physical Capital**

Physical capital is that created by economic production. From the participatory processes of indicator identification, physical capital included infrastructure such as roads, irrigation facilities, electricity, equipments such as storage facilities, and housing.

**Figure 4.5 Physical Capital Development Status of Interviewed Farmers**



Source: Fieldwork returns, 2011

From figure 4.5, about 41% of farmers were extremely poor in physical capital development before the GPRS II, reducing considerably to 31% after GPRS II inception. Also, about 46% of farmers were in the vulnerable category before GPRS II whereas the aftermath of the GPRS II saw another reduction in the figure to 40%. For the viable category, proportion of farmers was only 8% before GPRS II while it increased impressively to about 15% after the inception of the GPRS II. Lastly, only 5% of farmers were considered to have sustainable physical capital development before the GPRS II, which also increased impressively to about 14% after the inception of the GPRS II.

From hindsight, it is reasonable to suggest a good, yet unsatisfactory, impact of the GPRS II interventions on developing farmers’ physical capital assets to some extent. This improvement has largely been due to the free distribution of new varieties of certain crops to farmers, and provision of technical advisory services to some farmers or building appropriate storehouses for agricultural produce using readily available and inexpensive technology.

Another factor for relatively higher physical capital development levels was that many farmers now lived in cemented/bricked houses with appropriate ventilation and/or two or more rooms. However, regarding provision and access to other physical farming inputs such as motorised water pumping machines for year-round farming, and all-weather road coverage linking farming communities to market sources, the majority of farmers recorded very low scores on the LAST sheet. Many farmers complained of poor road networks, especially when it rains, to convey their products to market centres. At some instances, poor nature of roads is

even deterring bulk buyers from bringing their own vehicles to cart agricultural produce from the farms, thereby saving farmers transportation costs.



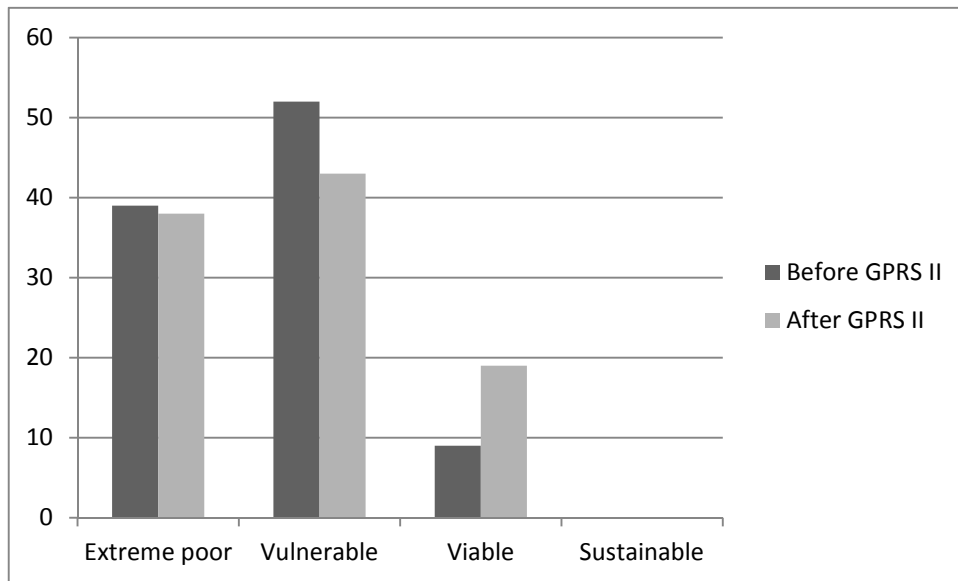
This suggests that efforts into providing physical facilities such as all-weather motorable road networks and water pumps could greatly enhance farmers' physical capital development and help reduce some of the vulnerabilities farmers' in the municipality are presently facing.

**Photo 3: Third class (graded earth) road linking one of the Communities to the main highway.** Source: Author (2011)

#### **4.8.4 Human Capital**

Human capital is mainly constituted by the quantity and quality of labour available. In this assessment, human capital constitutes farmers' information, knowledge, and skills level acquired through accessibility to well-trained extension agents. It is also determined by household size, but also by education, skills, and health of both the farmers and those they work with, which could be household members or hired labour. From this context and set of indicators, it could be seen that a measure of human capital (development) is invariably a measure of physical well-being and capacity to lobby for one's priorities (Rouse and Ali, 2000). For instance, on days in farming seasons when the poor smallholder cannot work on his/her farm or sell his/her produce on the open market due to ill health, s(he) is doubly penalised since s(he) have to forego the opportunity to generate income and may well incur healthcare costs.

**Figure 4.6 Human Capital Development Status of Interviewed Farmers**



Source: Fieldwork returns, 2011-03-14

From figure 4.6, while about 39% of farmers were extremely poor in human capital development before the GPRS II, the figure decreased very slightly to 38% after GPRS II inception. Also, about 52% of farmers were in the vulnerable category before GPRS II whereas the aftermath of the GPRS II saw decrease in the figure to 43%. For the viable category, proportion of farmers was about 9% before GPRS II while it increased to about 18% after the inception of the GPRS II. Lastly and worryingly, none of the interviewed farmers had developed any human capital prior to or after the inception of the GPRS II.

Low human capital development levels could be attributed to working relationships between the local MOFA directorate and farmers on the ground in information exchange, skills and knowledge dissemination. For instance, given limited resources for extension, the local MOFA directorate has adopted a strategy predicated on training a cadre of key farmers in each village to diffuse agricultural techniques. Under these conditions, it is natural to select the most enthusiastic and willing trainees, as these figures are more likely to be effective extension agents. In doing so, however, MOFA not only escapes directly training the more hesitant farmers, but also misses the opportunity to learn about the constraints facing those farmers, and as a result many farmers are unable to effectively develop their human capital further. As the director of the local MOFA office commented to me, “we tell our staff to look to the potential, to focus on, engage with, and learn from, successful participants and successful examples of their work, rather than dwelling on difficult or intractable issues.” Whilst this might generally appear to be a good operational strategy, it becomes problematic

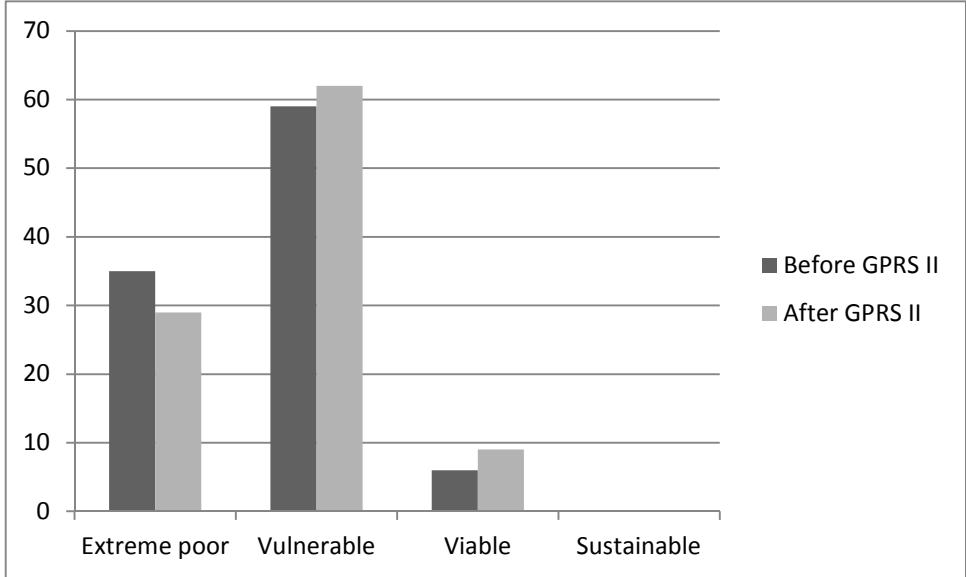


if it results in field staffs systematically escaping healthy confrontation with challenges to their model. The latter is actually the case in the municipality. This over-exposure to a self-selected group of willing participants creates an artificial and often false sense of achievement. These findings also confirms a Ministry of Local Government and Rural Development (2006) report which found that only about 26.8% of farmers in the Ejisu-Juaben municipality use the services of Agricultural Extension Agents while the majority 73.2% did not. That survey however attributed this situation on the inadequacy of extension officers (the frontline officers) who assist farmers to address emerging problems and introduce them to new techniques.

**4.8.5 Social Capital**

Social Capital is essentially any assets such as rights or claims that are derived from membership of a group. This includes the ability to call on friends or kin for help in times of need, support from trade or professional associations (e.g. framers’ associations) and political claims on chiefs, politicians, or state bureaucrats to provide assistance.

**Figure 4.7 Social Capital Development Status of Interviewed Farmers**



Source: Fieldwork returns, 2011

From figure 4.7, it is evident that about 35% of farmers were extremely poor in social capital development before the GPRS II, with the figure decreasing to about 29% after GPRS II inception. Also, a staggering 59% of farmers were in the vulnerable category before GPRS II whereas the aftermath of the GPRS II saw a further increase in the figure to about 62%. For

the viable category, proportion of farmers was only about 6% before GPRS II while it increased marginally to about 9% after the inception of the GPRS II. Unfortunately, none of the interviewed farmers had developed any social capital prior to or after the inception of the GPRS II.

The extremely low rate of social capital development could be accounted for by cultural factors. As discussed in the theoretical framework, intervening factors such as culture (way of life) also influences the success or failure of poverty reduction interventions. Two interesting observations pertaining to ways of life of farmers in the municipality were made; first that community members were at times sceptical to new ideas emanating from 'outsiders'; in other words, a culture of high resistance to change. This has proved problematic in the past in ensuring that through some interventions of the GPRS II, farmers are introduced to new varieties of seeds or new methods of cultivation. For instance, there was a situation where some farmers recounted that they stopped cultivating a new high-yielding, disease resistant, and early maturing variety they were introduced to and returned to their indigenous lower yielding variety because the former produced fruit which was too hard and starchy for their preference. Farmers also recounted that it was difficult to market them.

Second, the culture of strong community ties based on shared norms and networks of organisation in information and knowledge sharing to develop social capital was virtually non-existent in the communities. Especially when it came to forming groups to offer a position in accessing financial credits or group contributions to purchase farming inputs, the farmers were reluctant and did not have capacities to organise themselves into groups. A contributory factor is also the gradual decay of the communal life and extended family system of mutual help and rise of individualism as a result of distrust and/or avoidance of clash of conflicting preferences. According to one respondent, for example, farmers had been grouped into associations by a local NGO in the past but eventually dissolved because not all farmers in the groups were willing to contribute fairly in group loan repayments or sharing some benefits or working on group projects. This fear about unequal distribution of work and benefits was expressed by several farmers, acknowledging that within the past associations, people had different attitudes towards work. Simply, some were free-riders.

As a means to bring farmers together, a system of block farming involving developing very large acreages of land and distributing to farmers have been planned. However, since the municipality is located in a densely forested region of Ghana, staff complained of difficulty in acquiring these larger tracts of land solely for farming purposes.

When farmers are able to form credit-worthy groups and organise themselves effectively, they could for instance afford to acquire inputs such as motorised water pumps to supply water to ensure all-year farming of crops of crops with fetch premium prices. However, the only farmers' group encountered in the municipality was a pig farmers' association and a rice farmers' association (which included many smallholders) at Nobewam. Even the rice farmers' association was formed principally to negotiate for prices of paddy rice with a local mill they supply rice to, and to distribute suitably irrigated fields for paddy cultivation among smallholders on a rotational hiring scheme.

In development circles, those communities with a rich stock of social networks and civic associations have been shown to be in a stronger position to confront poverty and vulnerability, resolve disputes, share beneficial information, provide informal insurance mechanisms to each other, and have important impacts on the success of development interventions (Galasso and Ravallion, 2000). However, social capital, and for that matter societal efforts, also have costs and can be a liability. Not all social networks and associations are for just courses. At times, social networks and personal connections, even at the institutional level, can be used to unfairly discriminate, distort, and corrupt (Woolcock, 2002) in terms of only targeting interventions at those beneficiaries who have direct links with the authorities. This highlights the importance of institutional leveraging, mainly by the local MOFA directorate, to eschew such negative tendencies and support positive social capital development based on ethical working relationships and enhance cordial state bureaucrat-society relations.

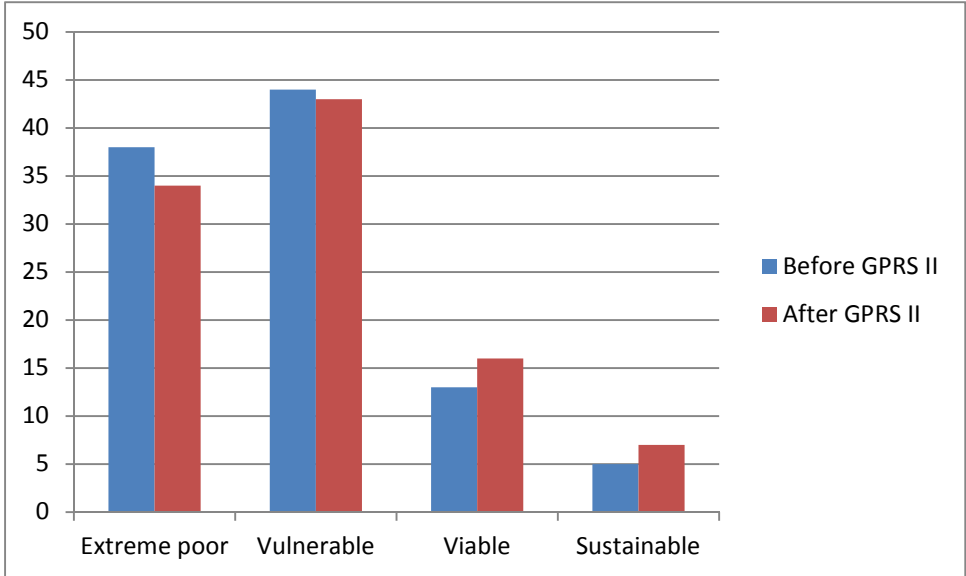
Evans (1996) makes a case that when sustainable improvements in the welfare of ordinary citizens is the aim, social capital development is a crucial ingredient. In fact without social capital, physical and human capitals are easily squandered, partly because informed social capital help share knowledge, skills, and other resources on comparative advantage basis and to make the local MOFA directorate accountable. Social capital is not a panacea, and more of it is not necessarily better. But the broader message is that how farmers are able to associate with others, and on what terms, has enormous implications for their well-being (Woolcock, 2002), thus the need for stronger social capital to mutually engage and to demand accountable service delivery for sustainable development. It is therefore important that positive energies in social capital be complemented and embedded by the activities of the local MOFA directorate.

### 4.8.6 Aggregated Assessment

An aggregated LAST index calculation for each farming household interviewed was also based on combined responses to questions and indicators of all five sets of livelihood capital assets. This was done to provide a general categorisation of farming households based on multidimensional factors from which to systematically conclude the vulnerability or resilient livelihoods or stages in-between of farmers’ livelihoods.

By using the LAST index methodology, results will show a percentage categorisation of farmers’ livelihoods based on multi-dimensional factors of natural, physical, financial, human, and social capital development is summarised in Figure 4.8

**Figure 4.8 Aggregated Livelihood Capital Assets Development Status of Local Farmers**



Source: Fieldwork returns, 2011

Figure 4.8 shows the livelihood resilience status of beneficiary farmers of the GPRS before and after inception according to farmers’ responses and critical observations. Accordingly, while there were 38% of farming households being extreme poor before the GPRS II and prior to 2006, there was a slight reduction to 34% of farming households in the municipality being extreme poor after the GPRS II in 2009. This means the livelihoods of farmers in the extreme poor category do not have the capacity to be very productive in a changing vulnerability context. The percentage of vulnerable households also did decline very marginally from 44% before the GPRS II to 43% after the GPRS II. The majority of households in the sample are still vulnerable. Here again, it could be inferred that farming households belonging to those categories were barely able to access many of the interventions of the local MOFA directorate.

There are also marginal increases of viable and sustainable farming households from 13% to 16% and 5% to 7% respectively before and after the GPRS II. This implies that the GPRS II has only marginally contributed to the reduction of poverty and development of resilient livelihoods over the initiation period to date (March 17 2011). This confirms findings and analysis in previous sections of the research as to participatory, management, and funding issues why the GPRS II has not duly benefited the greater majority of farmers in the municipality, and thus been very slow in progress made in its poverty reduction processes.

The Ghanaian Ministry of Local Government and Rural Development (2006), using the official upper poverty line of GH¢90.00 as the unit of measurement reports that about 37% of farmers in the Ejisu-Juaben municipality are extremely poor, with annual incomes below GH¢90.00 per annum. Considering inflation rates of about 10% and generally higher costs of living, even those farmers who earn up to GH¢500.00 per annum may even struggle to make ends meet. The relatively high proportion of farmers in the *extreme poor* and *vulnerable* categories affirms the findings of the Ghana Living Standards Survey 4 and Participatory Poverty Assessments Survey which identified the extreme poor or vulnerable and the excluded in Ghana to mainly include rural agricultural producers, particularly food crop farmers (Ghana Statistical Service, 2000). In more recent terms, an IFAD study revealed that in Ghana poverty is deepest among food crop farmers, who are mainly traditional small-scale producers (IFAD, 2010). This is despite the fact that national poverty rates have been cut almost in half, from approximately 51.7% in 1991-1992 to 28.5% in 2005-2006, and poverty decreased by about 17 percentage points in urban areas and by 24 points in rural areas (IFAD, 2010). Thus, it is confirmable that deliberate government interventions such as the GPRS have also had positive impacts in poverty reduction among farmers, at least from the marginal decreases in proportion of *extremely poor* or *vulnerable* groups and marginal increases in proportion of *viable* or *sustainable* livelihood groups as depicted by Figure 4.8.

But for the few beneficiaries of interventions who moved between categories, majority of farmers, especially those in the *extreme poor* and *vulnerable* categories before the inception of the GPRS II interventions remained there. Within this context, it is useful to examine the movement (transition) between the four categories outlined in Figure 4.8 from 2006 to 2009 to determine the extent which, if any, the GPRS II has helped farming households to transit to better and resilient livelihoods. To this end, farming households have been identified as being ‘unsuccessful’, ‘struggling’, ‘successful’ and ‘most successful’ households based on their directions of transition on the LAST aggregated multidimensional indicators (see *appendix 2*) before and after the GPRS II.

**Table 4.15 Estimation of Transition Matrix**

<b>Farming Household Group</b>	<b>Direction of the Transition</b>	<b>Results</b>	
		<b>Number</b>	<b>Valid %</b>
Unsuccessful	<b>From</b> viable/sustainable <b>to</b> vulnerable <b>or from</b> vulnerable/viable <b>to</b> extreme poor <b>or</b> remained in extreme poverty	34	34%
Struggling	Remained in vulnerable	43	43%
Successful	<b>From</b> extreme poverty <b>to</b> vulnerable/viable <b>or from</b> vulnerable <b>to</b> viable	5	5%
Most successful	<b>From</b> extreme/vulnerable/viable <b>to</b> sustainable <b>or</b> remained in viable/sustainable	18	18%
<b>Total</b>		<b>100</b>	<b>100%</b>

Source: Fieldwork returns, 2011

Table 4.14 shows the further categorisation of identified households groups and how. According to the above categorisation of households shown in Table 4.14, there are about 34% of farming households who have been unsuccessful in developing resilient livelihoods and improving their standards of living either because they transited from viable/sustainable livelihoods to vulnerable livelihoods or being extremely poor or remained extremely poor before and after the GPRS II. The table also shows that about 43% of farming households continued struggling to achieve resilient livelihoods and better living standards, and thus remained being vulnerable.

However, there are about 5% and 18% of farming households who have been relatively ‘successful’ and ‘most successful’ in their resilient livelihoods development attempts respectively. It should however be noted that among the 18% of ‘most successful’ farming households, only 1 (one) each transited from the extreme poverty and vulnerable household categories to the sustainable livelihood category. The vast remainder transited from viable livelihoods to sustainable livelihoods. This could be because some hitherto viable

households already had some significant amounts of productive assets which the GPRS II helped enhance for ensuring better livelihoods. As much as it is commendable that 5% and 18% of farming households in the municipality were ‘successful’ and ‘most successful’ respectively, the larger percentage of farming households still ‘unsuccessful’ (34%) and ‘struggling’ (43%) to become ‘successful’ or ‘most successful’ makes it increasingly difficult to argue, on the whole, that the GPRS II have been implemented successfully in manners to enable hitherto poor smallholder farmers in the municipality to develop viable, sustainable and/or resilient livelihoods *en masse*.

Generally, this evaluation however seems to contrast the Ghana National Development Planning Commission’s (NDPC) reports of highly successful impacts of the policies and programmes under the improving agricultural productivity sub-sector of the GPRS II on agricultural output, household incomes and food security (NDPC, 2009). For instance, it states that overall agricultural output in 2008 recorded an increase in growth rate from 2.5% in 2007 to 5.1% in 2008, whereas total domestic production of major staple foods like rice, maize, and cassava recorded significant increases of 13.4%. It is important to note that while the NDPC’s analysis are based on very broad macro-level evaluations involving a mix of cases where the relatively high performance (production levels) of certain traditionally ‘bread basket’ districts over-shadow the realities of poor performing ones, the validity of the findings of this independent study lies in its empiricist and detailed micro-level approach to data collection, analysis, and interpretation.

With this knowledge in mind, it is also interesting to discuss gender-based comparisons in the contribution of the GPRS II to resilient livelihoods, and by extension incomes. Table 4.16 shows a gender breakdown of interviewed farming household heads for this study. Since random probability sampling was used, the researcher had very little or no control over proportion of gender representation of respondents, hence the situation where males highly out-number females. For majority of women, it was found that they engaged in other economic ventures aside farming, such as trading and/or other female dominated vocations such as dressmaking, hairdressing, among others.

**Table 4.16 Detailed Gender Break-down of Interviewed Farmers**

<b>Farming Household Head</b>	<b>Number</b>
<i>De facto</i> female-headed households	3
<i>De jure</i> female-headed households	24
Male-headed households	73

Source: Fieldwork returns, 2011

Table 4.16 shows that the sample included 3 *de facto* female-headed household – where the male (husband) is working away from the home, usually in another community – and 24 *de jure* female-headed household – where the female is the sole head because of death of male spouse or divorce. The remaining majority of 73 farmers in the sample were males. As has been already established that capital asset development status of farming households directly affect farmers’ incomes, Table 4.17 presents gender-based differentiations in income as a proxy for assessing household head gender differences in access to and utilisation of productive capital assets.

**Table 4.17 Annual Incomes of Gender Groups Interviewed**

<b>Gender of Household Head</b>	<b>Frequency</b>	<b>(GH¢) 2006 Mean Income</b>	<b>(GH¢) 2007 Mean Income</b>	<b>(GH¢) 2008 Mean Income</b>	<b>(GH¢) 2009 Mean Income</b>	<b>Total Mean Income</b>
<i>De facto</i> female headed	3	150	163.3	160	233.3	176.7
<i>De jure</i> female headed	24	361.6	280	370.9	270.7	320.8
Male headed	73	655	409.2	499.4	565.6	532.5

Source: Fieldwork returns, 2011

Table 4.17 shows clearly that *de facto* female-headed households had the lowest total mean income of GH¢176.7 for the four-year GPRS II implementation period. Also, *de jure* female-headed households had total mean income of GH¢320.8 for the same period. Unsurprisingly, the highest total mean income among the categories was male-headed farming households, with total mean income of GH¢532.5 for the 4-year GPRS II implementation period. It is



important to note, however, that higher proportion of male-headed households in the sample may also contribute to the higher mean income for males. This is even more so as about 34% of male-headed households had ‘outlier’ income levels compared to their calculated total mean income. For instance, the total mean income for some individual male-headed households were around GH¢200 or less whilst others had around GH¢850 or more.

*De jure* female household heads interviewed mainly practised agriculture of smaller scales compared to the other two categories, but received remittances from their spouses who reside in other towns and/or undertook petty trading as extra income sources. This may explain why they have relatively lower wages among the three categories. However, considering regular remittances from spouses and other income from petty trading, the few farmers in the *de facto* category are relatively less vulnerable than *de jure* female-head who will have to rely solely on their meagre incomes in their attempts to strengthen their livelihoods and provide for their households.

Conclusively, the result in Table 4.17 has shown that male-headed households are less vulnerable than female-headed households. The vulnerability which women face is in part due to social norms. Such social norms among rural farming communities in the municipality, at times rooted in culture, include predominant male ownership of resources, some prevalence of matrilineal system of inheritance among the Ashanti tribe requiring the nephew (sister’s son) of a deceased man to inherit his properties, restricting women to domestic upkeep such as raising children, cooking, fetching water, among others. This empirical evidence reinforces the theory that culture (including gender-based discrimination and access to productive resources) and household dynamics can also cause risk and vulnerability (Cahn, 2002).

In such contexts where many women are usually accorded statutory status as minors, for instance, they are unable to own property or to obtain loans to build resilient livelihoods and property. Such bottlenecks can however be reduced drastically by legislative reform which could begin to address the challenge by removing institutionalised discrimination against women. An example of such legislative reforms had been the passage of the Interstate Succession Law, 1985 (PNDC Law 111) in Ghana, which however has had a slower progress due to implementation and enforcement challenges and also that many Ghanaian families do not follow the provisions of the law. This situation is however changing for the better though.

In addition to the hazards which all smallholder farmers in the municipality face, many female-headed households face the “double burden of being poor and being women” (World Bank, 2000). As the World Bank reports, assault, divorce, abandonment, social disgrace, pregnancy and the reproductive responsibilities of child rearing all impact upon women’s

livelihood options, strategies and outcomes. Human rights may be denied women and the assets they hold may be tenuous, held unofficially and they often lack champions to voice their concerns or needs. The domestic responsibilities which female farming household heads seek to fulfil also make them more vulnerable to livelihood-threatening occurrences like high climate variability and adversely changing socio-economic work conditions. But for livelihood development interventions to yield sustainable results, this study adds to the sustainable livelihoods framework that not only are capabilities and access of individuals and households to assets and activities that provide a means of living improved, but also those interventions operate within the specific traditional and cultural context adapting to and coping with vulnerabilities in that context. Therefore, it is reasonable to suggest that future interventions at livelihoods development for poverty reduction better incorporate and address socio-economic issues and contextual factors rooted in the culture of beneficiaries. This is because the processes of poverty reduction systems do not operate in isolation from influences (such as culture) that condition the flows of benefits through the livelihood, the choices available and the overall outcomes of the livelihood (Cahn, 2000).

#### ***4.9 Links between Farmers' Capital Asset Development and Livelihood Resilience***

From hindsight and based on the review of related literature, effective development of the five capital assets directly enhances ability of farmers to increase production and to acquire higher incomes for re-investments into their farming ventures and to provide for their household needs (Ellis 2000, Carney 1998, Scoones 1998). Similarly, the analysis has also shown that with adequate financial resources, farmers are – or will – be able to access inputs and other resources such as more labour, accessing improved crop varieties and irrigation, among others, to adapt their livelihoods and adequately cope with vulnerabilities they may face.

Unsurprisingly, comparing high income earning farmers to the type of capital asset developed, the results showed that about 91% of farmers with annual income of GH¢800 and above had high LAST Index scores of between 0.70 and 0.93 for financial, physical, and natural capital. This evidence suggests a positive correlation between financial, physical, and natural capital development and income levels of farmers, and that perhaps special effort should be directed at assisting farmers, those in the *extreme poor* and *vulnerable* categories to develop financial, physical, and natural capital.

For one, access to credit is a significant factor in smallholder farmers' ability to smooth income flows. This is not to downgrade the importance of social and human capital as farmers also need those capital asset types to, for instance, update their knowledge and skills and information and to access participatory opportunities in decision-making processes that affect their means of livelihood. In other words, human capital, for instance, is seen as critical in a farmer's ability to manage risks and shocks since education, skill, and information levels will influence the adaptation management options available to farmers.

Conclusively, many safety nets which exist among farmers in the agricultural sector in rich economies are rarely provided by the state in developing countries such as Ghana. Therefore, many smallholder farmers in the *extreme poor* and *vulnerable* categories have had to depend upon their own resources which, in terms of livelihood development and risk mitigation, tend to be focused on social capital, linkages and membership of networks of which farmers can expect assistance to provide some form of 'buffer' against shocks and vulnerabilities. However, social capital and linkages between relatively more successful and less successful smallholder farmers in the municipality is quite low to provide significant forms of networking and knowledge sharing to help other struggling farmers to improve on their productivity. Overall, the very low rates of social and human capital development means that many poor farmers are denied of such resources for their adaptation strategies, and hence the high proportion of smallholder farmers livelihoods are either extremely poor or vulnerable 2 years after the GPRS II programme ended.



## **CHAPTER 5**

### **SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS**

This chapter outlines the conclusion and recommendations of this study. Based on research findings, summarized answers are provided for the posed research questions. The discussions coupled with the drawn conclusions form the basis for the recommendations made.

#### ***5.1 Conclusion***

Reviews on the effects of Ghana's Growth and Poverty Reduction Strategy II (GPRS II) have concentrated on generalised issues and the identification of good lessons and practises for use in future implementation of similar programmes (see eg. National Development Planning Commission 2009, IMF 2009, Ankomah 2005, World Bank 2007, Wolter 2008). More importantly, the specific nature of thematic areas of the GPRS II such as improving agricultural productivity and its effects on livelihoods of poor and vulnerable groups such as food crop farmers have been little touched on. This knowledge gap has been the focus of this research, and how it fits into the array of international and national literature and discourses on the effectiveness of poverty reduction strategies (PRS). This study thus offers perhaps one of the most comprehensive documentation of the micro-level analysis of the GPRS II on agricultural productivity and enhancing smallholder farmers' livelihoods to create more private sector employment and reduce poverty.

A review of literature on the topic seem to reveal that the GPRS II has had mixed results with regards to its objectives. For instance, a general nationwide level analysis in some aspects of the programme, like food crop yields, may record encouraging results but micro level outcomes especially in rural areas present a different picture. Clearly, there was a need for assessments in this area to suggest possible recommendations for measures that will enable similar future projects and interventions to have sustainable and far reaching poverty-reducing outcomes. That was the pre-occupation of this research in the context of the Ejisu-Juaben municipality of Ghana.

The study adopted an analycentric approach to policy analysis of the GPRS II focusing on the micro-scale of typically farming communities in the Ejisu-Juaben municipality of the Ashanti region of Ghana. Livelihood analysis conceptual and methodological frameworks were also employed to assess the livelihood resilience building capabilities of local

smallholder farmers due to effects of the GPRS II. Further review of literature also found it necessary to adapt cultural (ways of life) dimensions to the sustainable livelihoods framework as a critical factor affecting the effectiveness of poverty reduction strategies such as the GPRS II in specific contexts. In a nutshell, the aim of the adapted framework was to capture the essence and realisation that access to assets, informal and formal rights, the ‘institutions’ which govern women and men’s lives at the household level differ significantly in the study area. Variance in literacy and formal education levels, domestic and community responsibilities, social customs were all found to influence the impact that interventions will have on households.

The data analysis revealed that although many of the interventions in the municipality’s action plan seemed to conform to the most critical empirical needs of local farmers for resilient livelihood development, the greater majority of farmers in the municipality have not duly benefited from the GPRS II, and thus been slow in its poverty reduction processes. The Livelihood Asset Status Tracking (LAST) analysis for instance revealed that although a few smallholder farmers were able to develop productive capital assets and to build *viable* and *sustainable* livelihoods through the activities of the GPRS II, a greater majority of smallholder farmers in the municipality have not been able to adequately develop capital assets for more productivity, hence having *extremely poor* and *vulnerable* livelihoods. These findings however seem contradictory to the many macro-level analyses of the GPRS II which tend to give a somewhat false confidence of the performance of the GPRS II on agricultural productivity, especially of smallholder farmers. To conclude therefore, answers are provided to the research questions posed for this study.

**Question 1: What are the main items of the municipal formal action plan, and to what extent does the municipal agricultural agency follow the plan?**

In the Ejisu-Juaben municipality, the District Agricultural Development Unit of the municipal directorate of the Ministry of Food and Agriculture is the institution charged with implementing the municipal level plans of GPRS II in promoting agricultural productivity. The work plans are drawn annually for each year, however it was possible to generate a synthesised summary of work plans covering the 4-year GPRS II implementation phase into dominant themes and their main activities and expected outcomes.

Summarising the items in the action plans, the interventions focussed mainly on productivity enhancement, sustainable land management, expansion of production and market/trade infrastructure. On the conceptual design level, it also appears that the strategies

and interventions were consciously or unconsciously developed to incorporate elements of the five productive capital assets of physical, financial, human, natural, and social capital. Thus, a strategy to facilitate modernization of agricultural production for instance is closely linked to physical capital development. In the same way, to facilitate access to agricultural credit, storage market and other facilities also builds on financial capital development. While this can be said about the policy interventions on paper, the important aspect is to identify tangible results *en masse* on how it is translated into sustainable livelihoods of farmers on the ground. While the plan on paper seemed to be well-designed to respond to specific needs of farmer beneficiaries on the ground and to address other pressing developmental problems, it was not properly implemented through appropriate coordination of efforts of various stakeholders including effective participation of beneficiary farmers in decision-making and resource allocation, as well as adequate financial and logistical commitment to the course.

**Question 2: To which degree are the farmers knowledgeable and operating according to the specific projects and interventions of the municipal action plan for enhancing agricultural productivity?**

It is also important that farmers (beneficiaries) are well aware of any such interventions comprehensively and their contextual and personal conditions deliberately incorporated in the process of policy development and implementation through active participation and engagement. As the findings in the supply side of farmers' participation by the Ejisu-Juaben directorate of the Ministry of Food and Agriculture MOFA has shown, although planning processes and needs assessment to identify and implement interventions in the action plan involved some degree of consultation and participation of concerned farmers, the process has mainly been top-down. Input of farmers in the process is very little.

Methods of disseminating information about the programme are very limited in reach. For instance, many of the farmers are illiterate and just disseminating information by information vans or radio may not be enough for them to fully comprehend the programme and what it is about. There may need to be two-way communication processes between farmers and the MOFA for them to adequately understand what the programme is about. This has also contributed to the situation where many farmers are even unaware of municipal level interventions to promote accelerated growth in agricultural productivity and development of farmers' livelihoods.

While it is plausible to identify the challenge with the MOFA with respect to lack of participation for smallholder farmers to structure farming activities and organise themselves

to access the interventions in the action plans, cultural orientation and organisation of smallholder farmers need not be over-looked. In the communities, findings show that though there are traditions for mutual help and gathering around common values, distrust and fear of being exploited by others in joint activities hampers the processes of participation in collective bargaining and ownership of resources. Meanwhile, the mechanisms for participation and the inherent social norms and traditions of genuine collective action and bargaining have an impact on the creation and the strength of social capital in the communities.

**Questions 3: What is the level of the smallholder farmers' participation in programme activities under the improving agricultural productivity sub-section of the GPRS II?**

Given a general situation of low literacy and national policy information consumption rates among many farmers in the municipality, they might not be aware of mandatory requirements for participatory provisions to be made to all stakeholders and so it may be assumed that MOFA could voluntarily invite as many farmers as possible to deliberate on issues. But this is not the case. As a result, majority of farmers in the various farming communities are not aware of how agricultural productivity decisions outlined in the action plans are made and what role they can play in the process to ensure they structure their farming activities to take full advantage of interventions in the action plan. Even for the very few farmers who've had some levels of direct consultations with the local MOFA directorate, they complain they are losing their quest to seek participation opportunities mainly because in the few times they have enjoyed some participation – however small – their priorities and concerns have not been catered for so they see no reason to participate.

Also, given limited resources for extension, the local MOFA directorate has adopted a strategy predicated on training and engaging a cadre of key farmers in each village to diffuse agricultural techniques. Under these conditions, it is natural to select the most enthusiastic and willing trainees, as these figures are more likely to be effective extension agents. In doing so, however, MOFA not only escapes directly training the more 'laggard farmers' (as some extension agents refer to them) or struggling ones, but also misses the opportunity to learn about the constraints facing those farmers. As the director of the local MOFA office commented to me, "*we tell our staff to look to the potential, to focus on, engage with, and learn from, successful participants and successful examples of their work, rather than dwelling on difficult or intractable issues.*" Whilst this might generally appear to be a good



operational strategy, it becomes problematic if it results in field staffs systematically escaping healthy confrontation with challenges to their model. The latter is actually the case in the municipality. This over-exposure to a self-selected group of willing participants creates an artificial sense of achievement.

**Question 4: What are the environmental and working conditions of the farmers in the municipality? Have the farmers experienced any change(s) in these conditions, and if yes, how do they cope with these changes?**

Results from primary data sources implied that there is some form of consensus among the farmers that climatic conditions (rainfall pattern, temperature distribution, humidity, etc) that they are accustomed to in their mainly rain-fed farming activities have changed and keep on changing. This primary account also seems to conform to the conclusions of the scientific investigation into climate scenarios under the Netherlands Climate Change Studies Assistance Programme (NCCSAP) about falling mean annual rainfall levels and rising mean annual temperature levels in the semi-deciduous forest region of Ghana (where the Ejisu-Juaben municipality is located) over the years. The main manifestation of climate variability affecting farmers in the municipality had to do with instability of and changes in expected climatic patterns. There are other identified important socio-economic factors which have significant ramifications on the work of smallholder farmers in the municipality. Present state of production levels (including crop yields and producer prices of crops), land, capital, labour, and credit were identified as the main socio-economic indicators of conditions of work which have significant ramifications on the productivity of smallholder farmers in the municipality. It has also been revealed generally that smallholder farmers in the municipality are experiencing, or have experienced, adversely changing trends in prices, land, capital, labour, and credit resources which affect their livelihoods.

Contributions of the local MOFA directorate to help smallholder farmers adapt to and cope with vulnerabilities in climatic and socio-economic work conditions have been very minimal in that many farmers have had to rely on sometimes ineffective adaptation mechanisms such as shifting production periods, constant fertilisation of land, rainwater harvesting, among others. The analyses show that farmers' means of livelihood reflected wide ranging reactive but not anticipatory coping strategies. The fact is coping strategies of farmers identified in the study area denoted *short-term* reactive responses which is often not effective to mitigate climate vulnerabilities, for instance, because change is only introduced in response to the onset of the impacts that will re-occur. However, indigenous knowledge gained over the

years have enabled the majority of farmers in the municipality to also develop some form of the rather more effective anticipatory coping strategies where they adjust their farming systems before the impacts take place. This showed that just as the farmers' livelihoods were at risk to vulnerabilities like climate variability, those risks also propel the true strengths of the local farmers in adaptation measures.

**Question 5: What is the overall performance of the GPRS II to improving agricultural productivity and farmers' livelihoods in the study area?**

The study employed the Livelihood Asset Status Tracking (LAST) methodological framework to analyze the overall performance of the GPRS II on improving agricultural productivity and developing resilient livelihoods for smallholder farmers in the municipality. The basis for the LAST methodological framework in assessing overall impacts is dual; first it offers a multidimensional view on the assessment. Second, there is proven premise that the asset – financial, physical, human, natural, and social capital assets – status of the poor is fundamental to understanding the options open to them, the strategies they adopt to attain livelihoods, the outcomes they aspire to and the vulnerability context under which they operate (Ellis, 2000).

The LAST index calculations revealed that while there were 38% of farming households being extreme poor before the GPRS II and prior to 2006, there was a slight reduction to 34% of farming households in the municipality being extreme poor after the GPRS II in 2009. This means the livelihoods of farmers in the extreme poor category do not have the resilience to be very productive in a changing vulnerability context. The percentage of vulnerable households also did decline very marginally from 44% before the GPRS II to 43 percent after the GPRS II. The majority of households in the sample are however still vulnerable. Here again, it could be inferred that farming households belonging to those categories were barely able to access many of the interventions of the local MOFA directorate.

There are also marginal increases of viable and sustainable farming households from 13% to 16% and 5% to 7% respectively before and after the GPRS II. Information from this result implies the fact that the GPRS II has only marginally contributed to the reduction of poverty and development of resilient livelihoods over the initiation period to date (March 17 2011). This confirms findings and analysis in previous sections of the research as to participatory, management, and funding issues why the GPRS II has not duly benefited the greater majority of farmers in the municipality, and thus been very slow in progress made in its poverty reduction processes.

The data acquired was then used to examine the movement (transition) between the four categories outlined above from 2006 to 2009 to determine the extent which, if any, the GPRS II has helped farming households to transit to better and resilient livelihoods. To this end, farming households were identified as being ‘unsuccessful’, ‘struggling’, ‘successful’ and ‘most successful’ households based on their directions of transition on the LAST aggregated multidimensional indicators before and after the GPRS II.

The results showed that about 34% of farming households had been unsuccessful in developing resilient livelihoods and improving their standards of living either because they transited from viable/sustainable livelihoods to vulnerable livelihoods or being extremely poor or remained extremely poor before and after the GPRS II. Also, about 43% of farming households continued struggling to achieve resilient livelihoods and better living standards, and thus remained being vulnerable. However, there were about 5% and 18% of farming households who have been relatively ‘successful’ and ‘most successful’ in their resilient livelihoods development attempts respectively. It should however be noted that among the 18% of ‘most successful’ farming households, only 1 (one) each transited from the extreme poverty and vulnerable household categories to the sustainable livelihood category. The vast remainder transited from viable livelihoods to sustainable livelihoods. This could be because some hitherto viable households already had some significant amounts of productive assets which the GPRS II helped enhance for ensuring better livelihoods.

As much as it is commendable that 5% and 18 % of farming households in the municipality were ‘successful’ and ‘most successful’ respectively, the larger percentage of farming households still ‘unsuccessful’ (34%) and ‘struggling’ (43%) to become ‘successful’ or ‘most successful’ makes it increasingly difficult to argue, on the whole, that the GPRS II have been implemented successfully in manners to enable hitherto poor smallholder farmers in the municipality to develop viable, sustainable and/or resilient livelihoods *en masse*. This adds up to findings and analysis in previous sections of the research as to participatory, management, and funding issues that the GPRS II has not duly benefited the greater majority of farmers in the municipality, and thus been very slow in progress made in its poverty reduction processes.

Hence, based on these empirical findings, observations in the field, and analyses, I reject the preposition of the study and argue that the GPRS II has not been used as an intervention to effectively develop essential stock of capital assets (human, physical, financial, natural, and social) necessary for poor smallholder farming households to develop adequately resilient and sustainable livelihoods.

## **8.2 Recommendations**

From the foregoing discussions and conclusions, the following recommendations are made. While the findings showed that generally smallholder farmers in the communities are not proactive in demanding that MOFA provides avenues for them to actively participate in decision-making systems, the local MOFA directorate itself also tend to look at beneficiary farmers in the communities as mere recipients of government services with very little or no potential and information to improve local decision-making processes. Whereas making final policy decisions fall within the domain of appointed and elected officials based on their professional and electoral mandate respectively, meaningful participation of smallholder farmers in policy processes that affect their lives should be acknowledged, respected and valued. In any case, mechanisms that ensure meaningful participation actually beyond mere information dissemination and needs assessment, I believe, will enhance the capacity of the Ejisu-Juaben MOFA to deliver appropriate services and further reduce the need for people to react negatively or have negative perceptions or act in apathy to activities of MOFA.

As a ministry, MOFA is overwhelmed by the magnitude and complexity and financing requirements involved in designing, coordinating, and implementing agricultural productivity related programmes, plans, and policies, especially at the micro level. This makes a case for more studies into the establishment of a semi-autonomous Agricultural Development Authority to cater for the interests of, especially smallholder farmers. This authority may be tasked solely with the ‘business-like’ implementation of agricultural sector development projects aimed at reducing farmers’ vulnerabilities. The entity could partner with the private sector to provide cost-efficient and mutually beneficial incentives to cater for resilient livelihoods of farmers and assure food security. Since there is no uncertainty regarding the potential of smallholder agricultural development to increase incomes and assure sustainable livelihoods for farmers and guarantee food security, the Ghanaian government could increase direct investment support and budgetary allocations to the agricultural sector through this Agricultural Development Authority.

A process of acquiring and creating land banks has been initiated but should be accelerated for farmers’ access to save many poor farmers from the high cost of land acquisition. In any case, effective systems of use and access rights – especially of women – to land and other natural resources are essential to incentivise farmers for investments in its management and improvement over the long term.

As the smallholder agricultural sector, and agricultural development generally, is saddled with high risks and vulnerabilities, policy makers should adequately make provisions

to cover the risk factor in future intervention plans. Risk reduction strategies are varied but could include financing schemes such as facilitation of accessible and affordable credit, introducing social safety nets specifically for farmers including smallholders as a form of social investment into human capital development, institutionalised payments to farmers for environmental services provided such as planting of more tree varieties, among others. Rigorous efforts in these directions could provide financing mechanisms required to enable majority of smallholders to make the transition from risk-prone and vulnerable livelihoods to resilient ones. These measures however require continued political in making available the capacity and funds from sources such as Ghana's accruals from international carbon trading, among others.

Regarding challenges farmers face in marketing and selling their produce for better prices, establishing a standardised food crop marketing and selling system, as is done for the cocoa sector, based on standard scale measurements and corresponding prices is recommendable as a long term solution. This process could bring together concerned stakeholders to review scale measurements and their corresponding prices from time to time putting into consideration factors such as inflation rates, costs of production, demand and supply. This could help smallholder farmers to fetch better prices for their produce and standardise their incomes even when faced with glut situations. Not only is pricing important but also developing processing and storage capabilities through appropriate technologies in addition to agribusiness ventures to develop market chains to link up farmers with. The analysis also showed that that just as the farmers' livelihoods were at risk to vulnerabilities like climate variability, those risks also made the farmers to bring to fore their indigenous strengths in adaptation measures. Therefore, any future interventions at helping farmers to adapt to risks and vulnerabilities must first assess such indigenous systems and build upon it for widespread easy adoption and success.

It is also imperative to develop farmers' assets base (i.e. developing natural, human, physical and financial capital assets) to enable them develop resilient and sustainable livelihoods. Social and human capital assets were found to be least developed among smallholder farmers in the municipality. In the context of the study area where services such as social safety nets and subsidies are rarely provided for farmers due to limited funds, it is important that efforts are made into enhancing already held stocks of social and human capital to manage risks and shocks since education, skill, networking, and information levels will influence the adaptation management options available to farmers. This may further allow farmers to enhance their physical, natural, and financial capital assets status for better

livelihoods. MOFA as an institution must therefore develop the ability, capacity, and willingness to consciously help enhance productive capital assets of farmers, starting with productivity of assets that farming households or communities already hold.

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# Appendices

## Appendix 1

### Livelihood Asset Status Tracking (LAST) Index Calculation for the Livelihood Capital Assets

Alternatively, the identified indicators of the capital assets could be directly incorporated into the equation 1. The formulae for calculating LAST indexes of each of the capital assets separately and an aggregated LAST index for all combined livelihood capital assets for each farming household are indicated below.

$$\text{Natural Capital} = \sum \frac{\text{LandArea} + \text{Yield}/\text{hectare} + \text{LandFertility} + \text{LandAccess}}{\text{Perfect Summation}}$$

NB: The 'Perfect Summation' is obtained by multiplying the number of indicators for each type of capital asset by 100 in order to get index scores.

Consider this example:

Calculating LAST index for a household based on scores to responses in LAST sheet to determine its natural capital assets development status:

*Respondent A scores 60 for land area, 50 for yield per hectare, 80 for land fertility, and 50 for land access on the natural capital component of the LAST sheet. What is the natural capital development status of Respondent?*

$$\Rightarrow \frac{60 + 50 + 80 + 50}{400} = 0.6 = \text{Viable natural capital development status}$$

NB: 400 being the 'Perfect Summation' here because there are 4 indicators

Physical Capital =

$$\sum \frac{\text{StorageFacility} + \text{StorageQuality} + \text{Irrigation} + \text{Housing} + \text{TransportFacilities} + \text{FacilitiesMaintenance}}{\text{Perfect Summation for Physical Capital}}$$

Financial Capital =

$$\sum \frac{\text{AnnualIncome} + \text{IncomeSufficiency} + \text{MarketedOutput} + \text{CreditFacilities} + \text{Insurance} + \text{InfoAvailability} + \text{Subsidies}}{\text{Perfect Summation for Financial Capital}}$$

$$\text{Human Capital} = \sum \frac{\text{Amenities} + \text{ExtensionVisits} + \text{Cooperatives} + \text{CapacityDevelopment}}{\text{Perfect Summation for Human Capital}}$$

$$\text{Social Capital} = \sum \frac{\text{Participation} + \text{Networking} + \text{CommunalResourceMobilisation}}{\text{Perfect Summation for Social Capital}}$$

For obtaining LAST index for all capital assets combined for a household, add scores of all responses to all questions (indicators) in the LAST sheet and divide by the Perfect Summation of all the indicators in the LAST sheet.

## Appendix 2

### Structured Questionnaire for the Quantitative Assessment

#### A. Demographic Information of the Household Head

1. Gender of household head

- (a) Male [    ]
- (b) Female [    ]

2. Age

- (a) 20 – 30 years [    ]
- (b) 31 – 40 years [    ]
- (c) 41 – 50 years [    ]
- (d) 51 – 60 years [    ]
- (e) 60 years and above [    ]

3. Educational status

- (a) Never been to school [    ]
- (b) Primary School [    ]
- (c) Junior high school/Middle school [    ]
- (d) Senior High School/Secondary school [    ]
- (e) Technical/Vocational [    ]
- (f) University/Polytechnic [    ]
- (g) Other, please specify.....

4. Marital Status

- (a) Single [    ]
- (b) Married [    ]
- (c) Divorced [    ]
- (d) Widow/Widower [    ]

5. Number of persons in household/family

**B. Conditions of Work**

6. How long have you been farming?

- (a) Since birth [    ]
- (b) 5 years [    ]
- (c) 10 years [    ]
- (d) 15 years [    ]
- (d) 20 years and above [    ]

7. What crops do you grow on your farm?

8. What is the composition of your workforce?

- (a) Work alone [    ]
- (b) Work with support from household members [    ]
- (c) Hire casual labour [    ]
- (d) Use communal labour [    ]
- (e) Other, please specify.....

9. How did you acquire your farmland?

- (a) Inheritance [    ]
- (b) Allocation by family head and/or village chief [    ]
- (c) Lease or rent [    ]
- (d) Purchased yourself [    ]

10. In your view, what are the main challenges you experience in your agricultural activities?

- (a) Adverse bio-climatic conditions [    ]
- (b) Insufficient high-quality land [    ]
- (c) Labour scarcities [    ]
- (d) Economic remoteness, with presumably higher transaction and input costs [    ]
- (e) Lack of credit markets as a result of no collateral [    ]

(f) Low level of education and skill [    ]

11. Which water source(s) do you use most in your farming activities?

- (a) Rainfall [    ]
- (b) Mechanised irrigation sources (eg. large reservoir tanks, pumped water, etc) [    ]
- (c) Wells and boreholes [    ]
- (d) Other, please specify.....

12. Have you experienced any change(s) in physical climatic conditions in which you work over the past 10 years? (a) Yes [    ] (b) No [    ]

If yes, what do these changes relate to?

- (a) Low rainfall [    ]
- (b) High rainfall [    ]
- (c) Change in and instability of expected rainfall pattern [    ]
- (d) High temperature [    ]
- (e) Prolonged dry season [    ]
- (f) Other, please specify.....

13. Rate your knowledge of the GPRS II on its interventions targeted at improving agricultural productivity in this municipality.

- (a) Very high [    ]
- (b) Knowledge only about District Agricultural Development Unit (DADU) providing some assistance [    ]
- (c) No knowledge [    ]

14. What are your other sources of income/livelihood aside food crop farming?

- (a) Remittances (cash and gifts sent by family members not living with the household) [    ]
- (b) Labourer [    ]
- (c) Trading [    ]
- (d) Formal job [    ]
- (e) Other, please specify.....

15. Are you able to save part of your income?

- (a) Yes [    ]
- (b) No [    ]

If 'Yes' proceed to question 16, if 'No' jump to question 17



16. Through what means do you save part of your income?

- (a) Bank account [    ]
- (b) Traditional 'susu'<sup>9</sup> schemes [    ]
- (c) No bank or 'susu' account [    ]
- (d) Other, please specify.....

17. Total cash income earned

- 2006 >
  
- 2007 >
  
- 2008 >
  
- 2009 >

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<sup>9</sup> 'Susu' is local word for chit funds which are group saving schemes.

## C. Measurement of Livelihood Capital Assets

### 18. Natural Capital

	Prior GPRS II					Following GPRS II Inception				
	0 – 20 Worst case	20 – 40	40 – 60	60 – 80	80 -100 Best case	0 – 20 Worst case	20 - 40	40 – 60	60 - 80	80 – 100 Best case
<b>What is the size of the land area on which you farm?</b>	Less than 1.2 hectares	Between 1.2 and 5 hectare	Between 5 and 10 hectares	Between 10 and 20 hectares	Over 20 hectares	Less than 1.2 hectares	Between 1.2 and 5 hectares	Between 5 and 10 hectares	Between 10 and 20 hectares	Over 20 hectares
<b>What is your average amount of farm produce per hectare in a farming season?</b>	0.1 to 4 tons per acre	4.1 to 6 tons per acre	6.1 to 8 tons per acre	8.1 to 10 tons per acre	Above 10 tons per acre	0.1 to 4 tons per acre	4.1 to 6 tons per acre	6.1 to 8 tons per acre	8.1 to 10 tons per acre	Above 10 tons per acre
<b>How do you assess the farm land's quality in terms of fertility and its productiveness?</b>	Loss of farmland fertility	Low fertility (less than 4 tons per acre)	Moderate fertility (4.1 to 7 tons per acre)	Good fertility (7.1 to 10 tons per acre)	Very good to excellent fertility (above 10 tons/acre)	Loss of farmland fertility	Low fertility (less than tons per acre)	Moderate fertility (4.1 to 7 tons per acre)	Good fertility (7.1 to 10 tons per acre)	Very good to excellent fertility (above 10 tons/acre)
<b>How easy is it to access and acquire adequate and quality land on which to farm?</b>	No additional farmland accessible (loss of lands to developers)	Marginal lands only accessible in remote areas	Presence of arable land, but with limited access due to cost, tenure system, etc.	Presence of arable land, with moderate chance of easy acquisition	Presence of arable land, with high chance of easy acquisition	No additional farmland accessible (loss of lands to developers)	Marginal lands only accessible in remote areas	Presence of arable land, but with limited access due to cost, tenure system, etc.	Presence of arable land, with moderate chance of easy acquisition	Presence of arable land, with high chance of easy acquisition

## 19. Financial Capital

	Prior GPRS II					Following GPRS II Inception				
	0 – 20 Worst case	20 – 40	40 – 60	60 – 80	80 -100 Best case	0 – 20 Worst case	20 - 40	40 – 60	60 - 80	80 – 100 Best case
<b>What is your current average annual household income level per farming season?</b>	Less than GH¢70 <sup>10</sup>	Between GH¢70 and GH¢90 <sup>11</sup>	Between GH¢70 and GH¢90	Between GH¢500and GH¢1000	Between GH¢500and GH¢1000	Less than GH¢70	Between GH¢70 and GH¢90	Between GH¢70 and GH¢90	Between GH¢500and GH¢1000	Between GH¢500and GH¢1000
<b>Tell me about the stability and sufficiency of your income source(s) in terms of adequately meeting your household basic needs</b>	Unable to meet basic needs with current income	Current income fluctuating below and around official poverty line	Current income in farming season just enough to meet very basic needs	Income source fairly stable and adequate to provide wants beyond basic needs	Income sources very resilient to cater for household basic needs and wants	Unable to meet basic needs with current income	Current income fluctuating below and around official poverty line	Current income in farming season just enough to meet very basic needs	Income source fairly stable and adequate to provide wants beyond basic needs	Income sources very resilient to cater for household basic needs and wants
<b>What proportion of your farm produce are you able to effectively market for income?</b>	Less than a third	A third	Half	Up to about 75%	Over 75%; still left with enough stock for household food needs	Less than a third	A third	Half	Up to about 75%	Over 75%; still left with enough stock for household food needs
<b>Do you receive any form of credit facilities from government or private bank sources?</b>	No linkage, not even a bank account	No bank account; can get small loan	Bank account; saves money but cannot get large loans	Can get large loan; take advantage of bank loans	Easy loans/bank account; takes good advantage of bank schemes	No linkage, not even a bank account	No bank account; can get small loan	Bank account; saves money but cannot get large loans	Can get large loan; take advantage of bank loans	Easy loans/bank account; takes good advantage of bank schemes

<sup>10</sup> GH¢1.41 is equivalent to US\$1.00 as at December 7, 2010

<sup>11</sup> Two official poverty lines have been established in Ghana 1999 price. One is the food poverty line, or extreme poverty line at GH¢(cedis)70 per adult equivalent per year, which indicates that at this level, even if a household devotes 100 percent of its expenditure to food, it still cannot supply sufficient calories to its household members. Taking account of the need for non-food expenditures, an upper poverty line is set at GH¢(cedis) 90 per adult equivalent per year (IMF, 2005).

<b>Do you have knowledge of formal insurance products targeted at (smallholder) farmers? If yes, are you subscribed on any those products?</b>	No knowledge; no insurance policy	No knowledge; acquires assistance from family in times of shock	No knowledge; saves financial resources to offset future shocks	Aware of insurance products; not subscribed on any but saves money to offset shocks	Aware of insurance products; subscribed on any and saves money to offset shocks	No knowledge; no insurance policy	No knowledge; acquires assistance from family in times of shock	No knowledge; saves financial resources to offset future shocks	Aware of insurance products; not subscribed on any but saves money to offset shocks	Aware of insurance products; subscribed on any and saves money to offset shocks
<b>Is information readily available to you on, for instance, rainfall forecast or early warning systems to enable you respond to extreme climatic conditions in a timely fashion?</b>	No information	No information but farming activities doing relatively well	No information, relies on personal “expert” judgements	Accesses information through a third party, eg. colleague farmer	Readily accesses information personally through radio, TV, and local meteorological sources	No information	No information but farming activities doing relatively well	No information, relies on personal “expert” judgements	Accesses information through a third party, eg. colleague farmer	Readily accesses information personally through radio, TV, and local meteorological sources
<b>Do you receive targeted social protection support and other programmes such as stipends to help meet cash needs in times of shock?</b>	No	Yes, but too small	Yes; moderate	Yes; good	Yes; adequate and in a timely fashion	No	Yes, but too small	Yes; moderate	Yes; good	Yes; adequate and in a timely fashion

## 20. Human Capital

	<b>Prior GPRS II</b>					<b>Following GPRS II Inception</b>				
	0 – 20 Worst case	20 – 40	40 – 60	60 – 80	80 -100 Best case	0 – 20 Worst case	20 - 40	40 – 60	60 - 80	80 – 100 Best case
<b>Assess the chances for local communities in getting education, health, and extension services.</b>	Non-existence of basic socio-economic amenities	Socio-economic activities in a poor state to extent that it is unusable	Existence of only some socio-economic facilities and extension services but in poor state and not easily	Socio-economic amenities in good state and fairly accessible	High quality basic socio-economic amenities provided and highly accessible	Non-existence of basic socio-economic amenities	Socio-economic activities in a poor state to extent that it is unusable	Existence of only some socio-economic facilities and extension services but in poor	Socio-economic amenities in good state and fairly accessible	High quality basic socio-economic amenities provided and highly accessible

			accessible					state and not easily accessible		
<b>How many visits from extension officers do you receive averagely in a year and how easy are you able to access the services of these trained extension officers?</b>	No visit from extension officers	Extension officers rarely visit	Irregular and untimely visits of extension officers	Regular visits from extension officers. Services fairly accessible	Regular and timely visit from extension officers. Services readily accessible.	No visit from extension officers	Extension officers rarely visit	Irregular and untimely visits of extension officers	Regular visits from extension officers. Services fairly accessible	Regular and timely visit from extension officers. Services readily accessible.
<b>Do you join any farmers' cooperative union and how effective are these unions?</b>	No membership of any union; no knowledge of any such union	No knowledge of any union; presence of farmers' union in community	Membership of farmers' union; union not very effective in lobbying for all farmers' interests	Membership of farmers' union.	Active membership of cooperative union(s). Unions effective in advancing farmer's interests.	No membership of any union; no knowledge of any such union	No knowledge of any union; presence of farmers' union in community	Membership of farmers' union; union not very effective in lobbying for all farmers' interests	Membership of farmers' union.	Active membership of cooperative union(s). Unions effective in advancing farmer's interests.
<b>Please assess how your capacity has been developed to respond to and adopt economically and environmentally sound farming practises.</b>	No capacity development	Very low capacity	Good level of response to training but with significant difficulties	Good level of response to training	High level of response to training	No capacity development	Very low capacity	Good level of response to training but with significant difficulties	Good level of response to training	High level of response to training

## 21. Physical Capital

	Prior GPRS II					Following GPRS II Inception				
	0 – 20 Worst case	20 – 40	40 – 60	60 – 80	80 -100 Best case	0 – 20 Worst case	20 - 40	40 – 60	60 - 80	80 – 100 Best case
<b>What type of facility or system do you use to store harvested farm produce?</b>	No storage; sells all produce within 3 days after harvesting for low prices	Traditional methods; packing farm produce into plastic bags and baskets at farmers' home	Special houses kept cool and dry.	Specialised facilities equipped with pest control measures such as proper ventilation, flooring, etc.	Specialised facilities equipped with pest control equipments and cooling systems. Eg. special metallic grain silos, storage warehouses, etc	No storage; sells all produce within 3 days after harvesting for low prices	Traditional methods; packing farm produce into plastic and fibre bags and baskets at farmers' home	Special houses kept cool and dry.	Specialised facilities equipped with pest control measures such as proper ventilation, flooring, etc	Specialised facilities equipped with pest control equipments and cooling systems. Eg. special metallic grain silos, storage warehouses, etc
<b>Please estimate the quantity and quality (wholesomeness) of farm produce stored in good harvest seasons</b>	Low quality; most produce rot	Low quality; unable to store farm produce for up to 3 weeks	Moderate quality; appreciable level of storage management	Good quality; able to store farm produce for up to 1 month	High quality; able to store farm in fresh condition for over a month	Low quality; most produce rot	Low quality; unable to store farm produce for up to 3 weeks	Moderate quality; appreciable level of storage management	Good quality; able to store farm produce for up to 1 month	High quality; able to store farm in fresh condition for over a month
<b>Please tell me about the number and functionality of running water pumps and other irrigation facilities you have access to</b>	Rain-fed farming; no irrigation	Rain-fed farming; harvests rain water in addition	Transports water from off-farm sites to farm; harvests rain water	Use of irrigation canals but with intermittent functionality; harvests rain water	Access to water pumping machines; functional irrigation canals; harvests rain water	Rain-fed farming; no irrigation	Rain-fed farming; harvests rain water in addition	Transports water from off-farm sites to farm; harvests rain water	Use of irrigation canals but with intermittent functionality; harvests rain water	Access to water pumping machines; functional irrigation canals; harvests rain water
<b>Quality of Housing</b>	Mud house with thatched roof	Mud house with aluminium roofing sheets	Wooden with proper ventilation and aluminium roofing sheets	Single room cemented/brick house	Cemented/brick house with appropriate ventilation and two or more rooms	Mud house with thatched roof	Mud house with aluminium roofing sheets	Wooden with proper ventilation and aluminium roofing sheets	Single room cemented/brick house	Cemented/brick house with appropriate ventilation and two or more rooms

<b>All weather road coverage in communities</b>	No all weather road coverage	Third class roads (graded earth) with pot holes	Second class roads (gravel and crushed stones) with pot holes	All weather feeder roads	Asphaltic all weather first class roads	No all weather road coverage	Third class roads (graded earth) with pot holes	Second class roads (gravel and crushed stones) with pot holes	All weather feeder roads	Asphaltic all weather first class roads
<b>Time and cost to reach nearest market</b>	Long distance, high transport cost				Favourable distance, low transport cost	Long distance, high transport cost				Favourable distance, low transport cost
<b>Trained locals and other workers for doing the routine maintenance of physical facilities such as irrigation systems, etc.</b>	No trained personnel	No trained personnel	Self-mobilisation by community members to maintain facilities	Maintenance mainly by state institutions and irregular	Co-production between state institutions and community members to offer training and maintain facilities	No trained personnel	No trained personnel	Self-mobilisation by community members to maintain facilities	Maintenance mainly by state institutions and irregular	Co-production between state institutions and community members to offer training and maintain facilities

## 22. Social Capital

	Prior GPRS II					Following GPRS II Inception				
	0 – 20 Worst case	20 – 40	40 – 60	60 – 80	80 -100 Best case	0 – 20 Worst case	20 - 40	40 – 60	60 - 80	80 – 100 Best case
<b>Are avenues provided for you to actively participate in decision-making processes that affect your farming activities?</b>	No	Merely present at community meetings	Yes, some level of active participation	Yes, appreciable level of participation in decision-making	Yes, feel adequately empowered and opinions highly regarded in decision-making processes	No	Merely present at community meetings	Yes, some level of active participation	Yes, appreciable level of participation in decision-making	Yes, feel adequately empowered and opinions highly regarded in decision-making processes

<b>Do you think that community mobilisation activities in the GPRS II have enabled you build up better relationships with community members?</b>	No	No	No	Yes; relationships not always beneficial	Yes	No	No	No	Yes; relationships not always beneficial	Yes
<b>Did you get any benefit from such a relationship in terms of mobilisation of labour, credit, machinery and other farm inputs, etc?</b>	No				Yes	No				Yes



### **Appendix 3**

#### Interview Guide Targeted at Sampled Farmers for Qualitative Assessment

1. How knowledgeable are you about the components of the GPRS II for improving agricultural productivity?
2. How have you structured your farming operations to conform to and benefit from the interventions in the action plan of the local directorate of the Ministry of Food and Agriculture from 2006 to 2009?
3. Have you observed recognisable changes in the pattern of climatic and physical environmental conditions within which you've worked for the past 5 years? If yes, how do these changes affect your farming activities and ability to cope with such changes?
4. Please explain to me whether or not you are invited/encouraged to meaningfully participate in local policy interventions under the GPRS II that affect your livelihood?
5. What are your general impressions of the GPRS II for contributing to sustainable and resilient livelihoods of smallholder farmers like yourself?
6. Please tell me about any suggestions you have to improve local interventions of the GPRS II to meet your specific needs in your farming activities.

## **Appendix 4**

### Interview Guide for Municipal Directorate of the Ministry of Food and Agriculture (MOFA)

1. What are the main items outlined in the municipality's official action plan for improving agricultural productivity for the GPRS II implementation period?
2. What specific interventions in the municipal action plan have been targeted at building a sustainable and resilient livelihood of smallholder farmers?
3. In what ways do the municipal directorate of MOFA specifically implement these interventions outlined in the action plan?
4. How have local smallholder farmers been trained to respond adequately to and practise new techniques being introduced in these interventions?
5. How does the directorate target smallholder farmers to benefit from the programme?
6. Please highlight the success stories and any challenges the directorate faces in working with smallholder farmers.
7. Please provide your views on the way forward as far as building sustainable and resilient livelihoods of smallholder farmers in this municipality is concerned.

**Appendix 5**



**Photo 4: Main open market at Ejisu (municipal capital) where majority of farmers sell their produce to ‘market women’ (middlemen) who then sell to consumers**



**Photo 5: Some farmers sell their produce on the shoulders of the main Accra-Kumasi highway which passes through the municipality.** Source: Author



**Photo 6: Main street in one of the farming communities, and mud houses in which some of the farmers reside.** Source: Author