Republic of Ghana

2014 AGRIC SECTOR ANNUAL PROGRESS REPORT

Ministry of Food and Agriculture

Monitoring and Evaluation Directorate

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ABBREVIATIONS AND ACRONYMS

AAPF	Australian African Partnership Facility
ABFA	Annual Budget Funding Amount
ABL	Accra Brewery Limited
AEA	Agricultural Extension Agent
AESD	Agricultural Engineering Services Directorate
ADB	Agricultural Development Bank
AgGDP	Agricultural Gross Domestic Product
AFD	Agence Francaise de Developpment
AfDB	African Development Bank
AHPC	Animal Health and Production College
AIDS	Acquired Immune Deficiency Syndrome
AILAP	Agricultural Implementation and Land Access Programme
APD	Animal Production Department
APB	Annual Plans and Budget
API	Assisted Personal Interview
APL	Adaptable Programme Lending
AMSECs	Agricultural Mechanisation Service Centres
APPDF	Agricultural Private Public Dialogue Forum
APSP	Agriculture Policy Support Project
AR	Ashanti Region
ARB	Association of Rural Banks
ARS	Agricultural Research Station
ASWG	Agric Sector Working Group
ATVET	Agricultural Technical Vocational Education and Training
AVID	Australian Volunteer for International Development
BAC	Business Assistance Centre
BAR	Brong Ahafo Region
BOPOP	Buaben Oil Palm Outgrower Project
BPEMS	Budget Preparation Expenditure Management System
BTRM	Bi-monthly Technical Review Meetings
CAADP	Comprehensive Africa Agricultural Development Programme
CA	Conservation Agriculture
CAGD	Controller and Accountant General's Department
CARGS	Competitive Agricultural Research Grants Scheme
CBOs	Community Based Organizations
CBP	Commodity Business Plan
CBRDP	Community Based Rural Development Project
CBFMCs	Community Based Fisheries Management Committees
CDP	Cashew Development Project
CEPS	Customs, Excise and Preventive Service
CERGIS	Centre for Remote Sensing and Geographic Information System
CFSVA	Comprehensive Food Security and Vulnerability Assessment
CIDA	Canadian International Development Agency
CIRAD	Centre de Internationale en Researche Agronomique pour le Developpment
COCOBOD	Cocoa Marketing Board
CORAF	Conseil Ouest et Centre Africain pour la Recherche et le Développement Agricole

CPI	Consumer Price Index
CPVs	Community Poultry Vaccinators
CRI	Crop Research Institute
CRIG	Cocoa Research Institute of Ghana
CSD	Crop Services Directorate
CSIR	Council for Scientific and Industrial Research
CSO	Civil Society Organisations
CUA	Credit Union Association
CWIQ	Core Welfare Indicators Questionnaire
DAC	Damongo Agricultural College
DADU	District Agricultural Development Unit
DAES	Department of Agricultural Extension Services
DCS	Department of Crop Services
DDO	District Development Officer
DFATD	Department of Foreign Affairs, Trade and Development
DFR	Department of Feeder Roads
DMISO	District Management Information System Officer
DP	Development Partners
DVCCs	District Value Chain Committees
EAC	Ejura Agricultural College
EDAIF	Export Development and Agricultural Investment Fund
EMQAP	Export Marketing Quality Awareness Programme
EPA	Environmental Protection Agency
EMQAP	Export Marketing and Quality Awareness Project
ER	Eastern Region
ERROP	Eastern Region Rubber Outgrower Plantations Project
EU	European Union
FAs	Farmer Associations
FAA	Financial Administration Act
FAGE	Federation of Association of Ghanaian Exporters
FAO	Food and Agricultural Organisation
FAR	Financial Administration Regulation
FASDEP	Food and agricultural Sector Development Programme
FBO	Farmer Based Organisation
FC	Fisheries Commission
FFF	Farmer Field Fora
FRI	Food Research Institute
FSNS	Food Security and Nutrition Survey
FSRPOP	Food Security and Rice Production Organisation Project
FSP	Fertilizer Subsidy Programme
GADS	Gender and Agricultural Development Strategy
GALVMED	Global Alliance for Veterinary Medicine
GAPS	Ghana Agricultural Production Survey
GAR	Greater Accra Region
GAVEX	Ghana Association of Vegetable Exporters
GCAP	Ghana Commercial Agriculture Project
GDHS	Ghana Demographic and Health Survey
GDP	Gross Domestic Product
GEMP	Ghana Environmental Management Project

GEPC	Ghana Export Promotion Council
GGC	Ghana Grains Council
GGL	Guinea Ghana Limited
GHA	Ghana Highway Authority
GHABROP	Ghana Broiler Revitalization Project
GiDA	Ghana Irrigation Development Authority
GIMPA	Ghana Institute of Management and Public Administration
GLSS	Ghana Living Standards Survey
GMA	Ghana Meteorological Agency
GOG	Government of Ghana
GPC	Good Practice Centres
GPRS	Ghana Poverty Reduction Strategy
GRIB	Ghana Rice Inter-professional Body
GROW	Greater Opportunity for Women
GSA	Ghana Standards Authority
GSB	Ghana Standard Board
GSFP	Ghana School Feeding Programme
GSGDA	Ghana Shared Growth and Development Agenda
GSOP	Ghana Social Opportunities Project
GSP	Geological Positioning System
GSS	Ghana Statistical Service
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation)
HIV/AIDS	Human Immune Virus/Acquired Immune Deficiency Syndrome
H1N1	Swine Flu
HQCF	High Quality Cassava Flour
HRDMD	Human Resource Development and Management Directorate
ICCAT	International Commission for the Conservation of Atlantic Tunas
ICOUR	Irrigation Company of Upper Region
ICT	Information, Communication Technology
IEC	Information, Education and Communication
IFAD	International Fund for Agricultural Development
IFPRI	International Food Policy Research Institute
IITA	International Institute of Tropical Agriculture
IPB	Inter-professional Body
ISPM	International Standard for Phytosanitary Measures
IVRDP	Inland Valley Rice Development Project
JICA	Japanese International Cooperation Agency
JSR	Joint Sector Review
KAC	Kwadaso Agricultural College
KfW	Kreditanstalt fur Wiederaufbau
KNUST	Kwame Nkrumah University of Science and Technology
KR2	Kennedy Round Two
LAP	Land Administration Project
LEAP	Livelihood Empowerment Against Poverty
LDP	Livestock Development Project
LFP	Livestock Protective Fence
LPNF	Livestock Protective Net Fence
LRDP	Lowland Rice Development

MDAs	Ministries, Departments and Agencies
MDG	Millennium Development Goal
MDPI	Management Development and Productivity Institute
METASIP	Medium Term Agricultural Sector Investment Plan
MEF	Micro Enterprise Fund
MFIs	Micro Finance Institutions
MICS	Multiple Indicator Cluster Survey
MiDA	Millennium Development Authority
MIS	Management Information System
MISTOWA	Market Information System and Traders' Organisation
MOAP	Market Oriented Agriculture Project
MoFA	Ministry of Food and Agriculture
MoFAD	Ministry of Fisheries and Aquaculture Development
MoFEP	Ministry of Finance and Economic Planning
MOH	Ministry of Health
MOTI	Ministry of Trade and Industry
MOU	Memorandum of Understanding
MRACLS	Multi-Round Crop and Livestock Survey
MSE	Medium and Small-scale Enterprise
NADMO	National Disaster Management Organisation
NAFCO	National Food Buffer Stock Company
NCCE	National Commission on Civic Education
NDPC	National Development Planning Commission
NEPAD	New Partnership for Africa Development
NFEA	Non-Farm Economic Activities
NGO	Non-Governmental Organisations
NIDMAP	National Irrigation Development Master Plan
NNP	National Nutrition policy
NR	Northern Region
NRGP	Northern Rural Growth Project
NVRC	National Varietal Release and Registration Committee
OVCF	Outgrower and Value Chain Fund
P4P	Purchase for Progress
PATTEC	Pan African Tsetse and Trypanosomiasis Eradication Campaign
PBB	Programme Based Budget
PCMU	Project Coordination and Management Unit
PCU	Project Coordination Unit
PFI	Participating Financial Institutions
PGRRI	Plant Genetic Resources Research Institute
PMO	Planting Material Officers
PMU	Project Management Unit
PPMED	Policy, Planning, Monitoring and Evaluation Directorate
PPP	Public Private Partnerships
PPRSD	Plant Protection and Regulatory Services Directorate
PS	Private Sector
PVL	Prairie Volta Limited
RADU	Regional Agricultural Development Unit
RCB	Rural and Community Bank
RELC	Regional Extension Liaison Committee

REP	Rural Enterprise Project
RDO	Regional Development Officer
RIMS	Result Information Management System
ROPP	Rubber Outgrower Plantation Project
RSSP	Rice Subsector Support Programme
RTIMP	Roots and Tuber Improvement and Marketing Program
RTSC	Rural Technology Services Centre
SADA	Savannah Accelerated Development Authority
SAKSS	Strategic Analysis and Support System
SARI	Savannah Agricultural Research Institute
SALMS	Sustainable Agricultural Land Management Strategy
SEPs	Supervised Enterprise Projects
SLM	Sustainable Land Management
SRID	Statistics Research and Information Directorate
SST	Sea Surface Temperate
SWaP	Sector Wide Approach
TB	Tuberculosis
TOR	Terms of Reference
TSP	Technical Service Provider
TREND	Training, Research Networking for Development
T&T	Travel and Transport
UNDP	United Nations Development Programme
UR	Upper Region
USAID	United States Agency for International Development
UWR	Upper West Region
US$	United States of America Dollar
VELD	Vehicle Examination and License Division
VEPEAG	Vegetable and Pineapple Exporters Association of Ghana
VCTF	Venture Capital Trust Fund
VACNADA	Vaccines for Neglected Animal Diseases of Africa
VR	Volta Region
VSD	Veterinary Services Directorate
WAAPP	West African Agricultural Productivity Project
WECARD	West and Central African Council for Agricultural Research and Development
WFP	World Food Programme
WIAD	Women in Agriculture Directorate
WPM	Wood Packaging Material
WR	Western Region
WUAS	Water User Associations
YIAP	Youth in Agriculture Programme

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The Ministry of Food and Agriculture therefore, wishes to express its appreciation to all the team members who led the process, including the Director and staff of the Monitoring and Evaluation Directorate of the Ministry of Food and Agriculture. Appreciation also goes to all our partners and stakeholders including the Ministries, Departments and Agencies as well as National, Regional and District Agricultural Directorates for their inputs into the report, collaboration and cooperation which enabled us respond to the sector objectives during this reporting period.

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All errors and omissions in the report are the responsibility of the entire Monitoring and Evaluation Directorate Team of the Ministry of Food and Agriculture.

FOREWORD

The Ministry of Food and Agriculture has the mandate for the formulation, leading and facilitating the implementation of government's policies and programmes in the agricultural sector. It has as its vision, modernizing of agriculture culminating in a structurally transformed economy evident in food security, employment opportunities and reduced poverty. This vision is driven by a carefully thought through mission of promoting sustainable agriculture and thriving agribusiness through research and technology development, effective extension and other support services to farmers, fishermen, processors, and traders for improved human livelihood.

Planning, implementation and review of policies, and programmes in the agricultural sector in Ghana is guided mainly by the Food and Agricultural Sector Development Policy and its attendant implementation plan, the Medium Term Agricultural Investment Plan (METASIP). This report highlights the status of implementation of key policy objectives as defined in the FASDEP and the METASIP.

The report captures outcomes and impacts of the programmes and major interventions implemented by the sector during the year 2014 with 2008 as the base. These outcomes and impacts are reported according to METASIP programme areas; food security and emergency preparedness, increased growth in incomes, increased competitiveness and enhanced integration into domestic and international markets, sustainable management of land and environment, science and technology applied in agriculture development, and improved institutional coordination.

The 2014 Agricultural Sector Report is the third of such progress reports to be published by the Ministry. This document will be a major reference material for all stakeholders in the sector, including policy makers, Ministries, Departments and Agencies as well as students, researchers etc.

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EXECUTIVE SUMMARY

This report presents a summary of the agricultural sector's contribution towards the achievement of international, regional and national goals. Additionally, it also presents, challenges encountered during the period, lessons learnt and recommendations. At the national level, the report highlights the achievement of the objectives of the Ghana Shared Growth and Development Agenda (GSGDA), the Food and Agricultural Sector Development Policy (FASDEP II) objectives and the Medium Term Agricultural Sector Investment Plan (METASIP) targets.
Available data indicates that Ghana is on track to achieving two out of the three child malnutrition indicators ahead of 2015. For instance, the indicator of *'reducing by half the proportion of children who are underweight'* has already been achieved ahead of 2015, while the target of '*reducing by half the prevalence of wasting'* is on course and may also be met, if current trend continues. The indicator of '*reducing the prevalence of stunting'*, on the other hand, may require extra effort to achieve the target by the same period. In the case of agricultural expenditure, Ghana started meeting the 10% benchmark proposed by the Maputo Declaration since 2006.

In general, food has been available and accessible. However, there were slight increases in food prices in 2014 over 2013. Prices of maize, local and imported rice, sorghum, millet, yam and cocoyam increased by 24%, 41%, 35% , 33%, 16%, 15% and 19% respectively in 2014 over the same period in 2013. Prices of cassava and plantain, however declined by 2% and 18% respectively during the same period.

Productivity improvement activities were intensified during the period with modest increases in yields of rice (2%), maize (0.6%) and cassava (2%). There was no change in yields of sorghum and millet whereas the yield of yam declined marginally by 0.9%.

To address effects of climate change on agriculture, MoFA and its stakeholders have adopted the use of irrigation and other sustainable land management measures. As a result, area cropped under informal irrigation in 2014 increased by 152% compared to that in 2013 resulting in increased food production by 134% in 2014 from irrigated lands.

Quantities of domestic rice produced experienced an increase of about 8% in 2014, whereas quantity imported declined by 36% in the same period. Total rice available for consumption therefore declined by 17% in 2014. Averagely, over the past six year period (2009 -2014), Ghana's local production satisfied at least 48% of national rice requirement. Maize production declined marginally by 0.15% in 2014.

Import volumes of fish and livestock continued to decline. While domestic fish produced could satisfy 74% of total fish demand, domestic livestock production could satisfy about 57% of total national meat demand.

The values of crops, livestock and fisheries have increased tremendously in both real and nominal terms resulting in increased income of farmers. Interventions such as; support to outgrowers along commodity value chains, reduction of post-harvest loss through training and provision of warehouse infrastructure, improvement of road network and linkage to production areas, among many others have resulted in improved income of farmers.

Non-traditional agricultural exports contributed about 14% of total earnings from all agricultural exports in 2014, representing a marginal increase of 0.35% over 2013. Generally, there was a reduction in the quantities of most non-traditional agricultural commodities exported. To enhance market access of produce on international markets, a national certification body, SMARTCert has been introduced to reduce the high cost involved in the GlobalGAP certification. In addition, a Ghana Green Label Scheme which is aimed at promoting safe and internationally

acceptable quality of agricultural produce on the domestic market is being developed to enhance access to premium markets in the country.

Total volume of cocoa produced in 2013/2014 was 896, 219 metric tonnes representing about 7% increase over production in 2012/2013. The percentage of total cocoa production that is processed locally was 28% compared to 27% in previous year indicating that the campaign to increase processing of raw commodities is yielding dividend.

Funding of agricultural research in 2014 increased by 127% compared to the amount spent in 2013. A total of 349 different technologies were disseminated to 1,358,642 beneficiaries across the country in 2014. In addition, 4,338 women were reached with improved agro processing technologies on gari, tapioca, use of soybean in local dishes, preparation of potaghurt drinks, improved rice parboiling using improved equipment among others. A total of 400 community field demonstrations on good agriculture practices on crops, livestock and fish were also established to update the skill of farmers.

To address the low AEA farmer ratio in the country, MoFA promoted the dissemination of extension technologies through the use of FBO, community field demonstrations, study tours, field days, farmer field schools and e-agriculture as alternative means to reach out to farmers. The introduction of the e-agriculture programme has facilitated information dissemination through the use of mobile phones and the internet. To further enhance the activities of AEAs to reach more farmers, the government has partnered the private sector to provide motorcycles to extension staff. A total of 271 newly recruited staff were engaged during the period to augment the staff strength of the Ministry for effective delivery of services.

Effective institutional coordination minimizes duplication of efforts, and ensures efficient use of resources. Platforms such as; Agricultural Sector Working Group, Joint Sector Review METASIP Steering Committee and Strategic Analysis and Knowledge Support System facilitated information sharing, created opportunities for discussion of issues confronting the sector and recommended appropriate measures to address them.

The Government of Ghana in the 2014 financial year, allocated a total budget of GH¢306.89 million to the Ministry to implement its planned activities. At the close of the reporting period an amount of GH¢ 314.84 million was actually released, of which GH¢ 285.29 was spent in 2014. Out of the total budget allocated, the Government's contribution was GH¢128.12 million representing 41.0%, whilst development partners' contribution was GH¢178.77 million representing 59.0%.

In addition to Government sources, other financial institutions also supported agricultural sector activities through credits to their clients. The Agricultural Development Bank (ADB) disbursed a total amount of GH¢ 101.24 million to support various activities of the sector while the Export Development and Agricultural Investment Fund (EDAIF) supported mainly agro processing activities with an amount of GH¢101.179 million during the period.

Some key challenges which continued to confront the sector include overdependence on rainfall amidst climatic change effects, high cost of credit, high input cost and late release of funds among others. There is the need therefore for stakeholders in the sector to intensify their efforts in addressing these challenges if sector objectives are to be achieved. MoFA as the lead agency in the sector should also be adequately resourced to execute its mandate.

CHAPTER ONE

1.0 Introduction

The Ministry of Food and Agriculture (MoFA) has the mandate to report on activities of the agricultural sector. The report is one of the platforms by which the MoFA presents the agricultural sector's contribution towards the achievement of the targets of the Ghana Shared Growth and Development Agenda (GSGDA), Food and Agriculture Sector Development Policy (FASDEP II) and the Medium Term Agriculture Sector Investment Plan (METASIP). The report assesses the performance of the agricultural sector using indicators in the METASIP Results Matrix and is structured along the six METASIP programme areas, which are:

1. Food Security and Emergency Preparedness
2. Increased Growth in Incomes
3. Increased Competitiveness and Enhanced Integration into Domestic and International Markets
4. Sustainable Management of Land and Environment
5. Science and Technology Applied in Food and Agriculture Development
6. Improved Institutional Coordination.

1.1 Structure of the Report

This report is presented in seven chapters. Chapter one presents the general introduction, including the sector's contribution to global, regional and national targets. Chapters two through to seven focused on the strategies, initiatives and achievements of the sector based on each of the METASIP programmes. It also discussed the strengths and bottlenecks of the agricultural sector and made relevant recommendations. Last but not the least, the report also suggested alternate strategies to address the weaknesses, and build on the strengths of the sector.

1.2 Global, Regional and National Targets

At the global level, the international community has adopted the Millennium Development Goals (MDGs). The food and agricultural sector has direct impact on at least five of the MDGs which include: Eradication of extreme poverty and hunger (MDG1); Promote gender equality and empower women (MDG3); Reduce child mortality (MDG4); Combat HIV/AIDS, tuberculosis, malaria (MDG 6) and other diseases and ensure environmental sustainability (MDG7)

Agriculture plays a crucial role in the economy of developing countries, and is the main source of food, income and employment especially to rural dwellers. On this consensus, the Africa Union, through the New Partnership for Africa's Development (NEPAD) framework, adopted the Comprehensive Africa Agriculture Development Programme (CAADP). The framework aims to accelerate agricultural growth by 6% through a 10% contribution of government's total expenditure to the agricultural sector.

Ghana developed the Ghana Shared Growth and Development Agenda (GSGDA II) to guide the national development process which is consistent with the International and regional agenda, as spelt out earlier. The focus of agricultural development in the GSGDA is the modernization of agriculture to contribute significantly to the structural transformation of the economy. For agricultural modernization, the GSGDAII expects government to channel at least 10% of total expenditure to agriculture to stimulate an annual agricultural growth rate of at least 6%. The next couple of paragraphs present the extent to which these goals and objectives have been achieved over the period.

1.2.1 Reduction in the Proportion of Population Suffering from Hunger

Poverty reduction in Ghana has been driven generally by high GDP growth rate supported by increased government development expenditure and increased foreign investment. The government implemented a set of poverty reduction programmes in the past few years through introduction of special social interventions for example adoption of positive and productive security measures to address the long standing civil conflicts to attract private investment to agricultural production areas. Other specific initiatives that have contributed to reduction in poverty in Ghana include but not limited to; (1) Livelihood Empowerment Against Poverty (LEAP), (2) Ghana School Feeding Programme, (3) Capitation Grant and (4) Ghana Social Opportunities Project.

Ghana is also making progress in the reduction of child malnutrition. According to a report published by UNDP, (2010), child malnutrition indicators show that, Ghana is on track to achieving two out of three child malnutrition indicators ahead of 2015. The indicator of *'reducing by half the proportion of children who are underweight'* has already been achieved ahead of 2015, while the target on '*reducing by half the prevalence of wasting'* is on course and may also be met, if the current trend continues. The indicator of '*reducing the prevalence of stunting'*, on the other hand, demands extra effort to achieve the target by the same period.

In a 2013 MDG report published by NDPC, the prevalence of wasting declined from 14 percent in 1993 to 8.5% in 2008 indicating a 1.5 percentage points away from the MDG target. The proportion of underweight children also declined from 23% to 14% over the same period with 2.5 percentage points left to hit the MDG target. The rate of underweight children dropped further marginally to 13.4% in 2011 with 1.9 percentage point away from the 11.5% target in 2015. In contrast, the incidence of stunting among children declined by only 5 percentage points from 33% to 28% between 1993 and 2008. These suggest that, while the country is on-track to hitting the target of halving the prevalence of wasting and underweight among children ahead of 2015 with limited efforts, reaching the target of halving the prevalence of stunting among children requires more efforts to achieve the target by the same year.

1.2.2 Achievement of Maputo Declaration Targets

The Government of Ghana has committed to invest at least 10% of its annual expenditure to the agricultural sector as directed in the Maputo Declaration and supported by GSGDA. This is to attain 6% annual agricultural growth. The agricultural expenditure accounts for both direct and indirect expenses by governments to develop the agricultural sector. Available analysed expenditure data on the volume of agricultural expenditure show an increasing trend from 2008 (GH¢392 million) to 2011 (GH¢1, 45 billion) as shown in Table 1.1. In percentage terms, Ghana started meeting the 10% benchmark since 2006 but marginally slipped below the target in 2009 when it recorded 9.02%.

Table 1.1: Share of Total Government Expenditure on Agricultural Sector (2008-2011) in millions of GH Cedis

Sub Sector	2008	2009	2010	2011
MoFA (*Crops and Livestock*)	155,320	338,598	181,347	248,830
Fisheries	17,950	14,567	5,761	5,890
Forestry	34,234	67,815	35,158	91,996
Agricultural Research	56,510	93,331	79,603	64,815
Debt Servicing	68,418	650	-	-
PSI	2,168	5,462	54,000	125,460
Cocoa	57,613	169,224	822,498	884,516
*Feeder Roads	-	91,732	112,922	26,599
Total Agricultural Expenditure including Feeder Roads	392,213	781,379	1,291,289	1,448,106
**Total GoG Expenditure	3,842,750	8,659,268	11,036,923	13,837,325
% of Total GoG Expenditure to Agriculture	**10.21**	**9.02**	**10.5**	**11.7**

Source: GSS, 2011/PER

Further analysis of Table 1.1 shows that the Government of Ghana (GoG) between 2008 and 2011 has averagely committed 10.4% of its total annual expenditure on agriculture and related activities. The average growth rate of the sector however was 5.2% which is 0.8 percentage point short of the expected 6%. While this incremental trend in agricultural expenditure is commendable and an evidence of government commitment to the sector, one may be curious to find out the extent to which these growth have benefited the smallholder farmer.

Across the sub-sectors, the data indicate that significant proportion of government expenditure is spent on cocoa relative to crops and livestock where the majority of the agricultural labour force and poor smallholder farmers operate. For instance, with a total expenditure of GH¢57 million in 2008, expenditure on cocoa increased to GH¢885 million in 2011, representing more than 1000 percentage increase compared to less than 40% increase for crops and livestock during the same period. Considering that food crops and livestock contribute larger share to GDP than cocoa, and the fact that majority of smallholder farmers including women are in food crops and livestock sector as compared to cocoa, one can arguably conclude that investment in the agricultural sector is skewed in favour of the relatively less vulnerable segment of Ghana's agricultural population. Available figures, however, show that livestock and crop sub-sectors contribute more to GDP than cocoa. Specifically, in year 2009 for example, food crops and livestock contributed 66.8% to agricultural GDP relative to 11.5% for cocoa. Re-distribution of expenditure in the sector especially in favour of crops and livestock sub-sectors will stimulate more growth in the entire sector compared to the current pattern of expenditure.

1.3 Performance of Gross Domestic Product (GDP)

The revised Gross Domestic Product (GDP) 2014 by the Ghana Statistical Service (GSS) published in January, 2015 revealed that GDP growth rate at 2006 constant prices in purchaser's value showed a decline from 9.3% in 2012 with the least GDP growth rate of 4.0% recorded in 2014 as shown in Figure 1.1.

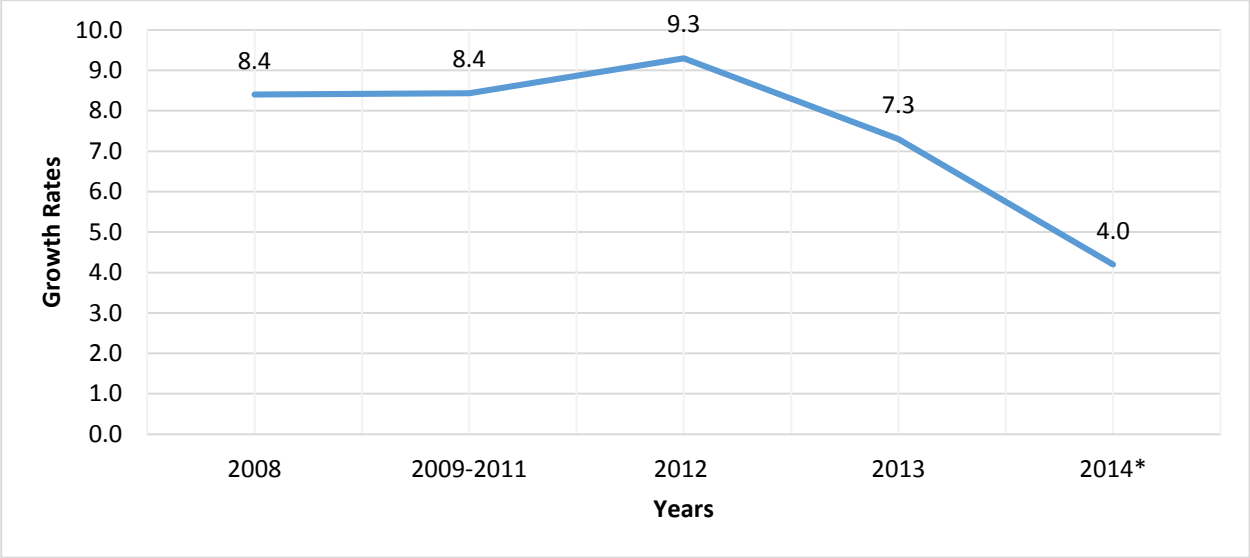


Figure 1.1 GDP Growth Rate in Purchaser's Value at 2006 Constant Prices

*Source: Drawn from data from GSS (*revised 2014 GDP, Published in April, 2015)*

These downward trends in growth rate are as a result of the mixed performance of the three sectors of the economy i.e. agriculture, industry and services sectors respectively. The agricultural sector recorded a GDP growth rate of 4.6% in the year 2014 as compared to the services and industrial sectors which recorded 5.7 % and 0.9% GDP growth respectively.

The services sector since 2012 contributed the highest GDP growth but lost its' leading role to agriculture in 2014. It can be observed from Table 1.2 that the industrial sector showed the worse GDP growth performance of 0.9% in 2014. The industrial sector was the best performer in 2011 with a growth rate of 41.6% as observed in Table 1.2. This was due to the sector riding on the back of oil which came on stream in 2011 (i.e. the period when oil entered into the economic activity equation). Its contribution to GDP growth rate has, however, dwindled since 2012.

Table 1.2: GDP Growth Rates by Sector at 2006 Constant Prices

Item	2008	2009	2010	2011	2012	2013	2014*
Agriculture-Total	7.4	7.2	5.3	0.8	2.3	5.7	4.6
Crops	8.6	10.2	5.0	3.7	0.8	5.9	5.7
of which cocoa	3.2	5.0	26.6	14.0	-9.5	2.6	4.3
Livestock	5.1	4.4	4.6	5.1	5.2	5.3	5.3
Forestry and Logging	-3.3	0.7	10.1	-14.0	6.8	4.6	3.1
Fishing	17.4	-5.7	1.5	-8.7	9.1	5.7	-5.7
Industry, Total	15.1	4.5	7.0	41.6	11.0	6.6	0.9
Services, Total	8.0	5.6	9.8	9.4	12.1	10.0	5.7
GDP at basic prices	9.1	4.8	7.9	14.0	9.3	7.3	4.0
GDP in Purchasers' Value	9.1	4.8	7.9	14.0	9.3	7.3	4.0

*Source: Ghana Statistical Service (April, 2015).*Revised GDP 2014*

Figure 1.2 shows percentage shares of the three economic sectors of Ghana in 2014 on the basis of distribution of non-oil GDP (at basic prices) by economic activity. It can be observed from Table 1.3 that from 2008 to 2014 the services sector still contributed the highest share of non-oil GDP (49.6%) whiles the agricultural and industrial sectors contributed 22.0 % and 28.4% respectively by economic activity.

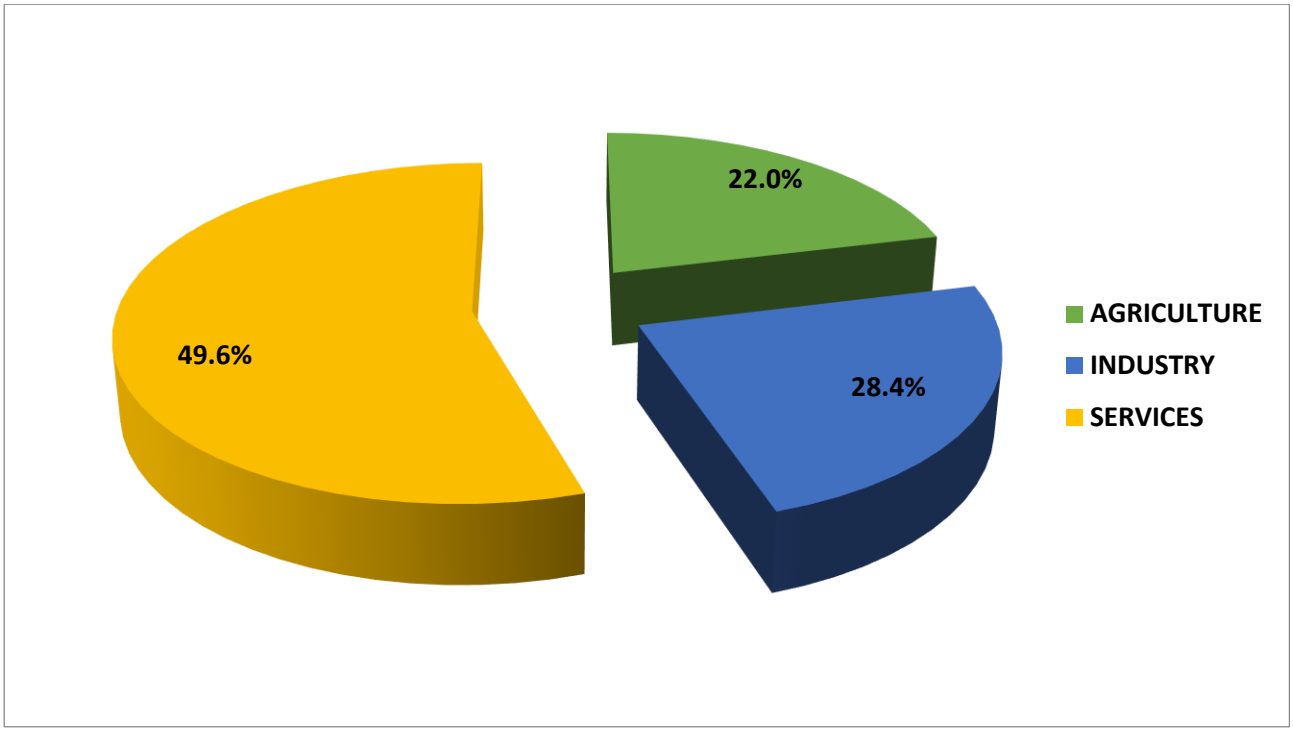


Figure 1.2: Distribution of Non-Oil GDP (at Basic Prices) by Economic Activity, %: 2014
Source: Drawn from data from Ghana Statistical Service (Revised 2014 GDP, April, 2015)

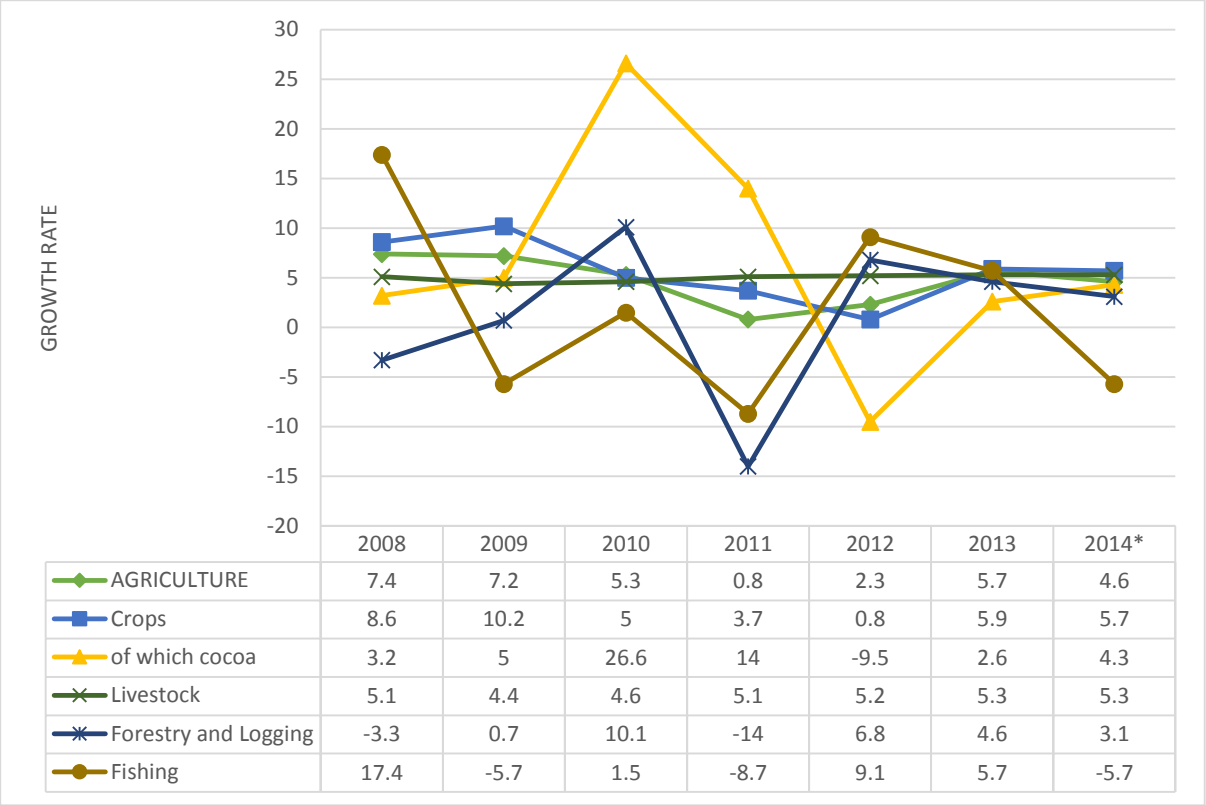
Table 1.3: Distribution of Non-Oil GDP (at Basic Prices) by Economic Activity, %

Economic Activity	2008	2009- 2011	2012	2013	2014*
Agriculture	31.0	29.6	24.8	22.4	22.0
Industry	20.4	19.3	22.0	27.8	28.4
Services	48.6	51.1	53.2	49.8	49.6
Gross Domestic Product at Basic Prices	100.0	100	100	100	100

*Source: GSS GDP 2014 *Revised (April, 2015)*

1.4 Contribution of Agriculture to Gross Domestic Product (GDP)

The agricultural sector GDP growth rate since 2008 experienced a remarkable decline till 2011 and an upward trend afterwards though this upward trend recorded is far below the 2008 GDP growth rate (i.e. 7.4% in 2008 to 4.6% in 2014), Figure 1.3.



	2008	2009	2010	2011	2012	2013	2014*
AGRICULTURE	7.4	7.2	5.3	0.8	2.3	5.7	4.6
Crops	8.6	10.2	5	3.7	0.8	5.9	5.7
of which cocoa	3.2	5	26.6	14	-9.5	2.6	4.3
Livestock	5.1	4.4	4.6	5.1	5.2	5.3	5.3
Forestry and Logging	-3.3	0.7	10.1	-14	6.8	4.6	3.1
Fishing	17.4	-5.7	1.5	-8.7	9.1	5.7	-5.7

Figure 1.3: GDP Growth Rates of the Agricultural Sector at 2006 Constant Prices
*Source: Drawn from data from Ghana Statistical Service (*Revised, 2014 GDP, April 2015)*

The a priori expectation of the implementation of FASDEP (II) is that, the agricultural sector's GDP growth rate after 2008 should experience an upward trend. From Figure 1.3, the fishing and forestry subsectors on the average have consistently performed poorly with respect to their contribution to the total agricultural sector's GDP growth rate. However, the fisheries subsector after 2011 has been showing tremendous upward trend in GDP growth rate. This is mainly due to the results of the efforts the country has been putting into aquaculture production over the period but recorded a growth rate of -5.7 in 2014 since all results of intervention made are yet to come to fruition.

CHAPTER TWO

2.0 Food Security and Emergency Preparedness

Food security is a situation where all people at all times have physical, social, and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO). To achieve this, the Ministry, in collaboration with its development partners and other stakeholders implemented interventions aimed at improving production levels of staple crops to ensure availability, accessibility, utilization and stability of food prices in the country. The METASIP, has been the guide to the realization of the objective of food security in Ghana. This is done through strategic investment in productivity improvement, distribution of agricultural produce, post-harvest management and nutrition improvement along various commodity value chains.

This chapter highlights the key effects of rainfall on agricultural production and productivity. Strategies implemented in relation to early warning systems and emergency preparedness are also reviewed during the reporting period. It also identified challenges and made recommendations to enhance the achievement of the objective.

2.1 Rainfall and its effect on Agriculture

The volume and distribution of rainfall are crucial determinants of agricultural production and productivity especially in developing countries in Sub-Saharan Africa. Figure 2.1 shows variability in the national annual average rainfall patterns over a seven year period. There was about 16% decline in rainfall volume from year 2013 to 2014. This reduction, however, did not affect the performance of major staple crops except maize production which reduced by 0.15%. This was because even though the volume of rainfall was lower in 2014, the distribution was better. An average of 72 rain days was recorded in 2014 as against 67 in 2013. High cost of agro inputs and tractor services are some of the notable causes of the reduction in maize production.

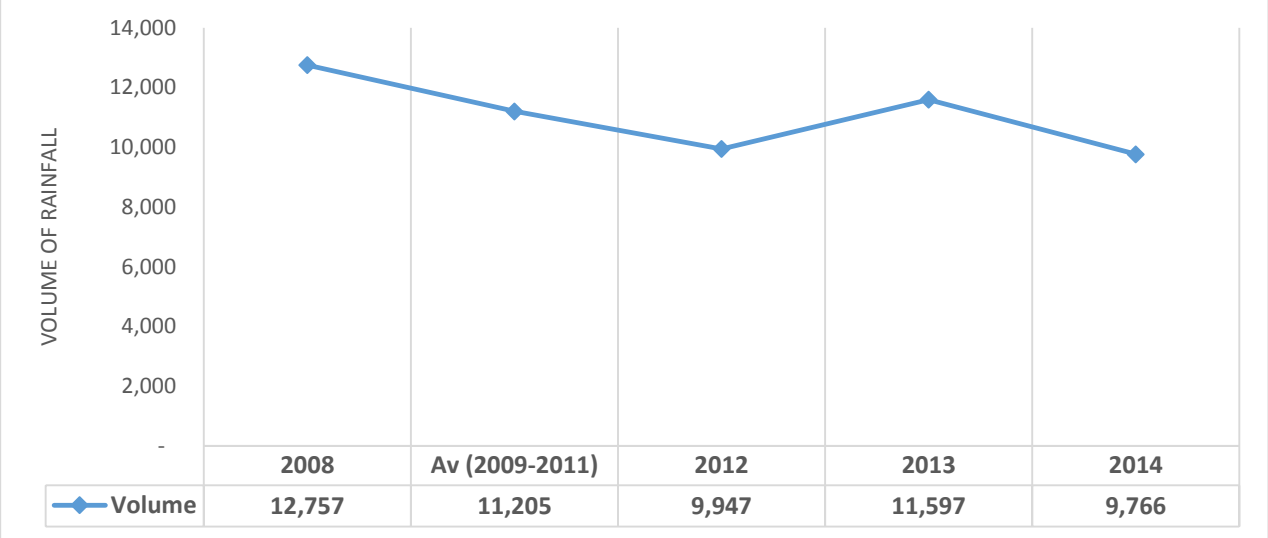


Figure 2.1: National Average Rainfall (mm) 2008-2014

Regional rainfall figures in 2014 indicated that five out of the ten regions recorded decreases in rainfall volumes compared to 2013. These regions include Western, Northern, Brong-Ahafo, Upper East and Upper West Regions, as indicated in Figure 2.2. Greater Accra Region, which is known for its peri-urban vegetable production recorded the highest percentage change in rainfall of 59.14 in 2014 compared to 2013. This was followed by the Central and Eastern Regions respectively.

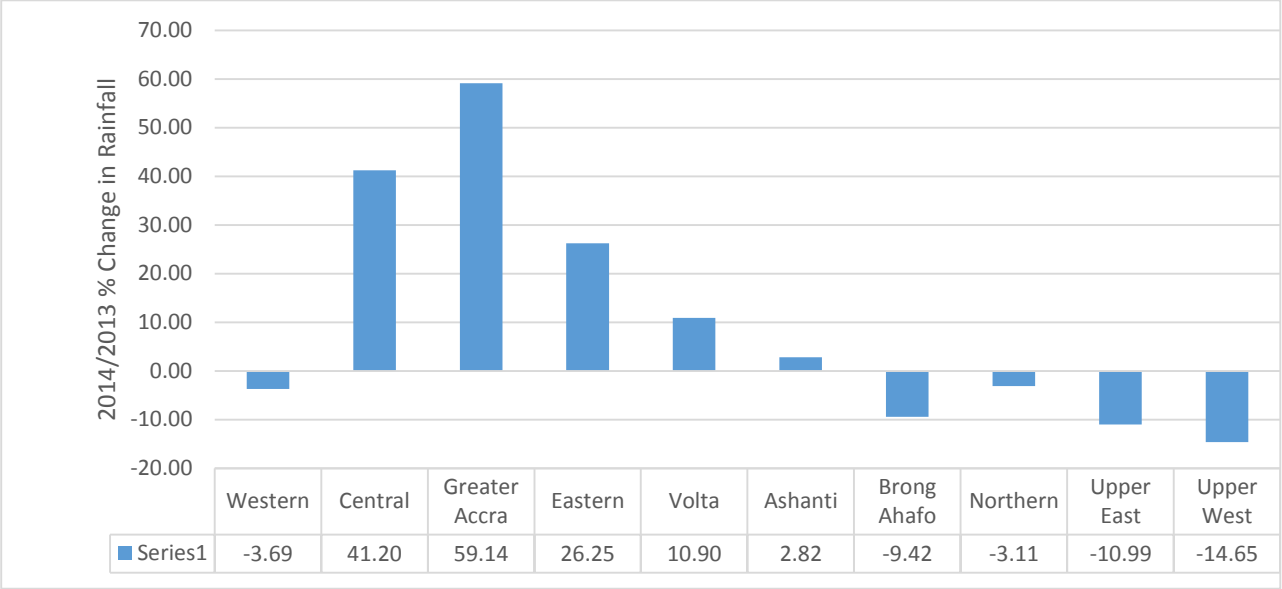


Figure 2.2: Percentage Change in Regional Rainfall Distribution, 2013/2014
Source: Meteorological Services Agency, Ghana.

The three regions of the north, namely Northern, Upper East and Upper West Regions collectively recorded about 29% less rainfall compared to year 2013. These regions recorded less than normal rainfall with prolonged dry spells during the period. This situation affected the establishment of vegetation which negatively impacted the availability of feed for livestock. It also negatively affected land preparation for the cultivation of major crops such as cassava, maize, sorghum, rice, groundnut, and cowpeas especially in the minor season.

The southern sector on the other hand experienced favourable weather conditions except the Western Region. Generally, the amount of rainfall and its distribution enhanced growth in crops, green vegetation and pasture. Increase in levels of water bodies, flooding, erosion and moist soils were also experienced especially in the Greater Accra Region. The rainfall pattern was also favourable for the transplanting of tree crop seedlings such as cocoa, citrus, oil palm, coconut, rubber and planting of late food crops. Parts of Brong-Ahafo Region experienced intermittent dry-spell from mid-August to the end of December. Most maize farmers were therefore compelled to shift into producing other crops such as rice in all the ecological zones and cowpea in the savannah and transitional zones.

2.1.1 Summary of Regional Weather Situation

The key indicators of rainfall during the reporting period have shown mixed characteristics. Whilst the northern part of the country generally showed quite irregular patterns with dry spells (resulting in drying of the Tono irrigation dam in the Upper East Region), the southern part generally was full of greenery with reports of flood in selected areas. The key indicators illustrating the effects of the weather situation on agriculture by regions are described in appendix one.

2.1.2 Occurrence of Natural Disasters and External Shocks

At least twenty three external factors which influenced the performance of crops, livestock and fisheries production along the value chain (processing, transportation, marketing, etc.) were monitored. However, only four very devastating external factors experienced during the period are covered comprehensively by this report. These are increase in input prices, malaria, effects of bush fires and floods.

One of the external factors that impacted negatively on agricultural production during the period was increases in farm input prices. Increases were observed in the prices of agricultural inputs across the country. For example, the price of NPK15-15-15, atrazine and machetes increased by 50%, 37% and 24% respectively, (details in appendix ten). This can be attributed to the absence of the fertilizer subsidy program, frequent increase in fuel prices and the general depreciation of the Ghanaian currency against other major currencies such as the US Dollar. This affected the patronage of tractor services for land preparation, and the rate of use of agricultural input negatively.

Reports from the regions indicate that some farmers were affected by malaria reducing their active involvement in farm work. Thirty one percent of districts reported of malaria affecting agricultural productivity with 80% of these districts perceiving the incidence to be on the rise. This has the tendency of reducing agricultural production and productivity if more farmers are affected.

Another very important external factor that affected agriculture negatively, especially in the north was bush fire. As at the end of the third quarter, 2014, National Disaster Management Organization (NADMO) recorded 64 agricultural related fires affecting about 497 hectares of farm land across the country. The Upper East Region specifically, experienced the incidence of bushfire in the Fumbisi valleys in the Builsa South District which destroyed about 144 hectares out of a regional total of 41,788 hectares of rice and a combine harvester belonging to the Ministry. This among other factors has reduced rice production in the region by a little over 42% (75,488 metric tonnes to 43,596 metric tonnes). To forestall future occurrences, efforts have been made by the Ministry to sensitize farmers on bushfire control, management practices and establishment of bushfire brigades and teams. Figures 2.3 and 2.4 show the rice farm before and after the disaster.

Figure 2.3: Rice field ready for harvesting at Fumbisi

Figure 2.4: Burnt rice field and combine harvester

Flooding has been a yearly occurrence in some parts of the country especially the Greater Accra, Western, Brong Ahafo and Volta Regions. The effect of these floods contributed to the poor yield of rice, tomato and maize and also poor accessibility to affected areas. In the Brong Ahafo Region, the floods and wind storm destroyed 20 poultry houses. Measures such as awareness creation and creation of gullies are being put in place by the Ministry to reduce the effect of flooding on agricultural performance.

2.2 Impact of Climate Change on Agriculture

Climate change affects agricultural ecosystems through deviations over the long-term in key variables affecting plant growth and through increasing the variability of weather conditions. These changes affect crop, livestock and fish productivity and quality as well as disease and/or pest infestations. Climate change directly affects food availability, access, and the stability of food supply, affecting food security.

The Ministry promotes activities that are intended to ultimately reduce the negative effects of climate change on the farm family. One of such activities is the promotion of dry season farming. During the year, through the Northern Rural Growth Programme (NRGP), the Ministry provided water pumps to interested farmers in the programme area. As part of environmental safeguards implementation, the programme procured and distributed tree seedlings (8,375 grafted mangoes, 2,000 cassia and 2,250 shea) to the beneficiary farmers for planting. This was to protect and enrich the buffer zones/river banks (riverine vegetation) of the perennial water bodies being used for irrigation. The effectiveness of this activity will be assessed in the coming years. Across the four beneficiary regions, an average of 71% of the seedlings have germinated and are being nurtured for survival. Table 2.1 gives the breakdown for the seedling distribution and planting by farmers.

Table 2.1: Summary of Seedlings Distribution and Planting by Farmers

No	Region	Districts	Seedlings			Survival Rates (%)
			Mangoes	Cassia	Shea	(Mangoes/Cassia/Shea)
1	Brong Ahafo	Pru/Sene/Kintampo Municipal	560	650	1100	85/78/60
2	Upper East	Garu Tempane/Bawku West/ Bawku Municipal	985	400	900	26/20/50
3	Upper West	Jirapa, Lawra, Wa West, Nandom, Nadowli	4,860	550	250	90/85/95
4	Northern	Central Gonja, Bole-Bamboi, Sawla-Tuna-Kalba	1,970	400	-	98/75/-
	Total		**8375**	**2000**	**2250**	

Source: NRGP, 2014 Annual Report

The buffer zones protection programmes have been accepted and are being practiced by farmers though with record of low survival rates especially in the Upper East Region. The low survival rate is as a result of destruction by animals, drought and bushfires experienced after planting. The next planting period has therefore been scheduled to meet the rainy season to improve the rate of germination especially in the Upper East Region.

Figure 2.5 Delivery of seedlings to farmers

Figure 2.6 Farmer transplanting seedling

2.3 Early Warning Systems and Emergency Preparedness

Early warning systems and emergency preparedness initiatives focus on improving the ability of the agricultural sector to respond to outbreaks such as, natural hazards and other natural calamities. The sector implemented key strategies to mitigate the adverse effects of these unexpected events in time.

The Ministry collaborated with the District and Regional Agricultural Departments for the provision of quarterly weather and food situation information. During the year, at least three quarterly weather and food situation reports were produced. These reports served as an early warning system offering advance notices to senior management of the agricultural sector. This has among others kept policy makers prepared for emergencies and ensured food security. The report is based on the crop performance as a result of the prevailing weather and the incidence or absence of pests and diseases on the fields. For example, the second quarter's weather and food situation report predicted an eminent maize shortage in the country. The country immediately responded by taking steps to rescue the situation through imports additional quantities of maize and also initiated commencement of the implementation of block farm programme in 2015.

The procurement process for the purchase of Automatic Weather Stations (AWS) for 16 meteorological stations is currently underway. Specifications for the AWS were developed with support from the Ghana Meteorological Agency (GMET) and bidding documents have been prepared. The stations shall be installed in the four pilot regions for collection and dissemination of climate information.

The AWS enable ease of access to weather data, reduce maintenance/ management cost and data logging system can be linked easily to the Ghana Meteorological Agency system. The weather information shall be interpreted by the Ghana Meteo Agency and transmitted to the beneficiaries via Esoko, a mobile SMS platform for market information sharing. Some initial contacts have been made with the Esoko platform managers.

Other key actions that were implemented to reduce the impact of disasters on farm families and their communities included establishment of disaster management committees, use of pheromone traps, prevention and control of pests and diseases and livestock and crop disease surveillance. Others include, monitoring and surveillance of major calamity pests such as variegated grasshopper, army worm, hairy caterpillar and spittle bug.

2.3.1 Preventive and Mitigation Initiatives Implemented

To minimize the shocks and impacts of disasters on farm families, various preventive and mitigation initiatives were carried out in the regions as scheduled. These initiatives were implemented under three key thematic areas; emergency preparedness and disaster management, establishment of strategic stocks and strengthening of early warning systems.

2.3.1.1 Emergency Preparedness and Disaster Management

The regions and district planned and implemented various activities in conformity with the broad programme and strategic plan of the sector. This facilitated the preparedness of the farmers for disaster management. Bushfire is still having a very devastating effect on farming activities across the country. This has necessitated the formation of fire volunteer groups/brigades by almost all the regions. Vaccination of livestock against diseases was also pursued according to plan. In the Greater Accra Region, all the districts procured vaccines and spraying equipment in preparedness for any outbreak of animal disease. In addition, disease surveillance and vaccination schedules were strictly followed at all levels during the year under review. This among other factors has contributed to about 48% reduction in scheduled disease outbreak (from 1,581 in 2012 to 822 in 2014).

In the Western Region, there was a remarkable collaboration between Regional Department of Agriculture, National Disaster Management Organisation (NADMO) and the District Environmental Health Office which resulted in the general cleaning and de-silting of drains. This was chiefly to prevent or at least reduce flood and its attendant damage to human and property.

The West African Agricultural Productivity Program (WAAPP) also supported the production and distribution of Thermostable Newcastle Disease (NDI-2) vaccine for the control of Newcastle Disease in poultry. It aimed at promoting nationwide field administration and readiness for the effective control of Newcastle Disease in the scavenging local bird. In 2014, twenty-one million doses of the Thermo-tolerant NDI-2 vaccine were produced. Currently, thirty-four million doses of vaccine had been produced since 2013.

Reports from the field indicate high effectiveness of the vaccine. The vaccinated birds survived the peak outbreak period of the Newcastle Disease. As such, farmers are now accepting the vaccine and ready to administer it themselves. This could widen vaccination coverage. Figures 2.7 and 2.8 are pictures (evidence) of some of the activities of the Ministry on NDI – 2.

Figure 2.7: Production of NDI-2 vaccine

Figure 2.8: Demonstration of administration of NDI-2 vaccine

In 2014, the Ministry through the Veterinary Services Directorate exported 2,400,000 doses of the NDI-2 vaccine to Niger (2,000,000) and Cote d'Ivoire (400,000). In Ghana, a total of 22, 863,000 doses of the vaccine have been distributed across the country. Some individuals as well as governmental, and Non-Governmental Organizations (NGOs) that are involved in family poultry improvement activities are also patronizing the vaccine. They include Heifer International, Animal Production Directorate and Krobodan (Danish NGO working in the Krobo area in the Eastern Region).

So far 5,748,805 of various local birds_have been vaccinated across the country with the vaccine. This represents 30**%** vaccination coverage. The Ministry, however, targets 65% vaccination coverage by 2017.

To achieve at least the set target of 65% vaccination coverage, 797 Community Poultry Vaccinators (CPVs) were trained by the Ministry during the period. These CPVs worked in various communities across the country. The PVCs carry out vaccination of village poultry with the supervision of veterinary personnel and it is hoped that in the ensuing year (2015) they will be skilled enough to work independently.

2.3.1.2 Establishment of Strategic Stocks

Government of Ghana established the National Food and Buffer Stock Company (NAFCO) in 2010, to store and release major commodities into the market. This activity regulates the prices of these commodities, though the quantities traded are not large with respect to the volumes traded in the economy as a whole. The company purchases and releases mainly maize, rice, and seldom sorghum and millet into the market during periods of scarcity.

From 2011 to 2014, the company released at least 884,773 (50kg bags) of rice and maize to the market through various institutions, Table 2.2. Sixty-eight percent of this total was maize (37%-white, 31% -yellow) with the rest (32%) being rice.

Further analysis of the data showed that, for rice, up to 95% was released for utilization by Ghana School Feeding Programme (GSFP) whiles the remaining 5% was used by NADMO for disaster relief services. For white maize, 69% was released to selected poultry farmers in the middle zone of the country, 31% to NADMO and 1% for flood victims in the Eastern Region in the year 2011.

Table 2.2: Sale of NAFCO (50kg bags): 2011 – 2014

Period	Rice	White Maize	Yellow Maize
2011	14,000	102,100	n/a
2012	138,857	n/a	147,087
2013	69,264	1,000	96,258
2014	62,275	227,277	26,655
Total	**284,396**	**330,377**	**270,000**

Source: NAFCO

2.3.1.3 Strengthening of Early Warning Systems

Early warning is a major element of disaster risk reduction. It prevents loss of life and reduces the economic and material impact of disasters. In Ghana where agriculture is mostly rain fed, with at least 50% of the population in agriculture, establishment and strengthening of early warning systems is very crucial. The sector, led by the Ministry, undertook initiatives which were expected to strengthen the existing systems. For example, Nzema East District in the Western Region, prepared an emergency preparedness plan in the event of an outbreak or shortage of food commodities.

Selected staff of the ministry were trained on climate risk assessment and vulnerability mapping using GIS as planning tool for the formulation of climate-resilient agricultural plans and the measurement of impacts of interventions. Two (2) training programmes have been conducted for twenty five (25) of RTIMP staff, Agricultural Extension, and Research staff. The aims were to build capacity in:-

- Assessing and mapping climate related vulnerabilities using GIS
- Identifying and implementing adaptation options.
- Monitoring and reporting on climate impacts.

The trainees shall undertake mapping in 21 communities to identify and implement adaptation strategies and monitor changes with the support of the University of Ghana's Department of Geography and Resource Development. GIS equipment and software have been procured for the pilot districts for this purpose.

The Ministry has worked with the meteorological agency to identify the areas for the training of their staff. A training curriculum has been developed for this purpose between the Ministry and the African Center of

Meteorological Application for Development (ACMAD) based in Niger. The training shall be on topics such as Climate data rescue and Management tools and products, Climate monitoring, prediction tools and products and Climate change scenario, impact, vulnerability and risk assessment tools and products.

Another training programme is being developed with the Physics Department of the University of Cape Coast, on climate modelling. The programme shall focus on the climate systems, climate models and modelling, Programming in Linux, Ferret and in R & R studio and Model simulation (regional climate model and crop model).

The ten regions and selected districts carried out diverse activities which sought to strengthen early warning systems in the sector. Upper West Region collaborated with World Food Programme to conduct a Food Security and Nutrition Survey (FSNS) and disseminated the result. In the same region, food commodity prices were broadcasted on radio through the support of PLAN Ghana. In a related development, the Ministry in collaboration with CAB International and CSIR established a total of 10 Plant -Wise Plant Clinics in the Fanteakwa, Yilo Krobo and Kwahu South Districts of the Eastern Region. The main objective of these clinics is to help farmers identify diseases early by bringing samples to these clinics and also to reduce the indiscriminate use of agro-chemicals. There are four trained plant doctors manning the various clinics. Non-chemical (e.g. use of beans extract and hot pepper and soap solutions) and cultural (crop rotation and rogueing) methods are used to solve farmers' problems. So far, a total of 507 farmers, have attended the clinics by December, 2014.

2.3.2 Schedule Disease Outbreaks

The Ministry employed various strategies throughout the country to prevent and control outbreaks of scheduled diseases. These included spatial strategies like imposition of ban on animal movement, quarantine, regulatory services and encouraging community participation. Some non-spatial strategies were also employed for the same purpose. These include animal health programme such as vaccination and prophylactic treatments.

Even with the enormous disease prevention and control measures, some disease cases were recorded. The Western Region for example, in January, 2014 suffered an outbreak of African Swine Fever in the Ellembele District which affected four communities; Anokyi, Baku, Ngalekyi and Ngalekpole. Fifty-four (54) farmers lost their livelihoods in the process. A total of 2,298 pigs died from the outbreak out of which 1,915 died naturally and 383 were quarantined and destroyed to stop the spread to other communities. The financial loss to farmers was estimated at between GH₵216,000.00 and GH₵360, 000.00.

Schedule disease outbreak over the years has experienced drastic decline especially from year 2012 to 2014 as indicated in Figure 2.9. This can be attributed to the initiatives that the Ministry implemented through the provision of vaccines for the control of Anthrax, PPR, CBPP, Newcastle, Gumboro, among others. The wider vaccination coverage and the number of trained Community Poultry Vaccinators (CPVs) to assist in the vaccination of village poultry by the Ministry over the years contributed to the reduction in schedule disease outbreak. To further achieve more reduction or at least maintain the gains made, Ministry of Trade and Industry under the TRAQUE project constructed three modern molecular biology laboratories one of which is located in the premises of VSD headquarters. This is expected to strengthen the diagnostic capacity of the Accra Laboratory.

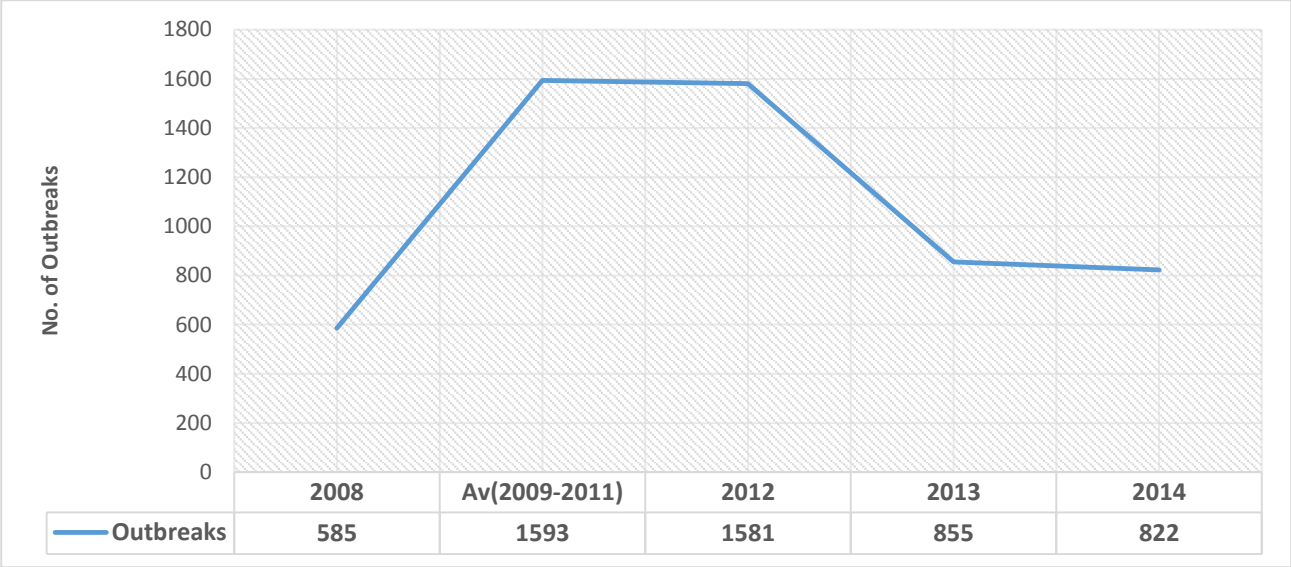


Figure 2.9: Trend of Schedule Disease Outbreak
Source: VSD/MOFA

The three regions of the north are endemic, especially to Anthrax, Blackleg and Hemorrhagic Septicaemia. This informed the Ministry to adopt an import substitution strategy by producing bacteria vaccines locally at the Central Veterinary Laboratory in Pong Tamale. Newcastle Disease is also an endemic disease in Ghana. Current strategy for control of the disease is by preventive vaccination. Thus under the National Livestock Project, the Ministry introduced the thermo-tolerant Newcastle Disease (V_4) vaccine and later (NDI.2) which is currently accepted as vaccine of choice for protection of local birds.

During the year 2014, 21,000,000 doses of the thermo-tolerant NDI-2 vaccine was produced with support from WAAPP. Cumulatively, a total of 34 million doses of the vaccine have been produced since 2013. The vaccine has been deployed in nine out of the ten regions of the country. The Ashanti Region did not benefit, because the region was involved in the Ministry's broiler revitalization project. The region will be roped in during the 2015 implementation period. All the above efforts are aiming at consolidating the gains made in prevention and control of schedule diseases in the country.

2.4 Domestic Food Supply and Demand

The domestic food supply and demand of a country determines its food sufficiency situation for a particular period. There is an indication that Ghana is food self-sufficient in all major food crops with the exception of rice which recorded deficits, Appendix two. This deficit in rice production and estimated consumption has seen a consistent reduction over the years. However, in 2014, the deficit widened further by 5 metric tonnes compared to 2013 deficit. This is attributed to non-implementation of the Block Farm Programme which produces a substantial amount of rice in the country. The promotion of rice production through projects such as RSSP, GCAP and NRGP is expected to reverse the trend in coming years.

2.4.1 Crop Production

Food production in Ghana for the past few years has shown an upward trend, thus increasing the country's potentials towards complete food self-sufficiency. Rice, cassava and yam recorded higher production levels in 2014 as compared to the average of year 2008 to 2013 with a difference of 6.06%, 3.34% and 0.63% respectively.

Generally, the production levels of major crops increased with the exception of maize which reduced slightly. Maize production declined marginally by 0.15%. Whiles a number of factors may account for this decline, the high cost of agricultural inputs and poor weather conditions in some parts of the country were

main suspected causes. As a result, most farmers shifted and cultivated crops that are drought tolerant and not heavily dependent on fertilizer (millet, and sorghum) in the northern sector thereby causing the areas of these crops to increase slightly by 1% and 0.49% respectively. The use of crops especially sorghum as raw materials for both the local and industrial breweries was also a contributing factor.

Rice production increased by about 6.06% although the domestic food supply and demand indicated a deficit of 285 metric tonnes as shown in Appendix two. The increase in production can be attributed to the government's priority of promoting rice production in different parts of the country through Public Private Partnership (PPP).
In a related development, the Ministry with sponsorship from the Export Development and Agricultural Investment Fund (EDAIF) supported rice farmers in the three regions of the north and the Volta Region with a total of 49,953 bags of fertilizer for the 2014 production season. Also, a rice intensification programme was rolled out with the distribution of 20 tonnes of certified seeds to 1,000 farmers (750 males and 250 females) in the Northern, Ashanti and Brong Ahafo Regions as "starter pack" to introduce high yielding WAAPP/CSIR-AGRA rice variety to farmers. This increased the area cropped under rice by a total of 400 hectares. The output of this support is expected to produce a minimum of 1,076 metric tonnes to bridge the gap between local production and imports.

The production of roots and tuber crops such as cassava and cocoyam experienced slight increases (2.5% and 2.4% respectively) in 2014, and resulted in about 408 metric tonnes and 31 metric tonnes respectively, as reported earlier. This increased production can be partly due to interventions of the Root and Tuber Improvement and Marketing Project (RTIMP) and the West African Agricultural Productivity Programme (WAAPP) through improved technology generation, dissemination and adoption. Additionally, there is availability of market for root and tuber crops. For example, cassava is being used as a raw material in the brewery industry. In 2014, Guinness Ghana Limited (GGL) and Accra Brewery Limited (ABL) purchased a total of 801,946.32 metric tonnes of raw cassava at a value of GH₵1,593,680 from farmers in selected districts.

There was a marginal increase in area under cultivation for the various selected staples with the exception of maize which reduced by 0.44%. This contributed to the reduction in the total output of maize by 0.15%, though there was a marginal increase in yield (by 0.01mt/ha). This is an indication of intensification of production by farmers. Also, during the period, farmers were observed holding onto old stocks awaiting better prices.

Area cultivated under rice experienced an increase of 3.96% compared to 2013. This can be attributed to the efforts by the various interventions discussed earlier. With more of such interventions, Ghana can achieve self-sufficiency in rice production and reduce the imports significantly. Similarly, the area put under cultivation of yam, cocoyam, plantain, cowpea and soya beans, all increased during the period. Whilst the area under yam, cocoyam and plantain increased by 1.5%, 3.2% and 4.9% respectively, the area under cowpea and soybeans increased by 2.3% and 2.5% respectively. It is worth noting that, though there were increases in area cultivated, there were relatively lower increases in productivity of all major crops except yam, (Table 2.5). This could have negative repercussion on Ghana's agricultural prospects if immediate steps are not taken to address the situation. This could be solved by releasing and disseminating more superior yielding varieties of these crops. The superior varieties are likely to increase production from the same crop area (or even less) and hence saving the environment from further destruction.

2.4.2 Production of Livestock

Estimated livestock population showed increases over the years (Table 2.3). This achievement can be attributed to productivity improvement interventions under the livestock sub-sector of the Ministry. Some of the successful interventions include; supply of improved livestock breeds to farmers, sustainability of the

credit-in-kind projects after its completion (in both pigs and small ruminants) and the cockerel project. Furthermore, investments in veterinary services, particularly improvement in disease control mechanisms and capacity building for community livestock workers ensured that the gains made through the animal production interventions are sustained.

Table 2.3: Livestock Population ('000)

Year	Cattle	Sheep	Goats	Pigs	Poultry
2008	1,422	3,529	4,405	506	39,816
Av (2009-2011)	1,463	3,763	4,872	542	47,882
2012	1,543	4,019	5,435	602	57,885
2013	1,590	4,156	5,751	638	63,732
2014*	1,657	4,335	6,044	682	68,511

Source: SRID/MoFA **Provisional*

Raising livestock in Ghana can be rewarding as long as the livestock is housed, fed and vaccinated properly. In this regard, the Amrahia Dairy Farm carried out a demonstration on zero grazing to livestock farmers. The demonstration was carried out on 30.0 hectares of land cropped with sorghum seeds and 0.5 hectares each with giant star grass and *Panicum maximum.* Also, 26 tonnes of forage (sorghum) was harvested for zero grazing of the cross breeds during the reporting period. A total of 3,612 bales (57.8 tonnes) rice straw were harnessed from Dawhenya for dry season feeding.

To cater for the feed requirement of the 100 goats supplied to Kintampo Goat Breeding Station under the livestock component of WAAPP, the station developed 10 hectares of pasture (*Cajanus cajan*- 4 hectares, *Stylosantes hamate*- one hectares, *Panicum maximum*- 4 hectares and *Cynodon nlemfuensis*- one hectares). These animals are meant for future expansion of the scheme after the expiration of the project. As a strategy to inculcate the practice of pasture development in livestock farmers, 90 small ruminant beneficiary farmers were trained in pasture development and supported with 300 kg of *Cajanus cajan* and 225 kg of *Stylosanthes hamate* seeds to establish fodder banks as feed buffer for their animals.

2.4.3 Fish Production

The fisheries sub-sector also contributes to the achievement of the country's food security goals by providing high quality and affordable fish protein in the daily diet of many households. The sub-sector is estimated to contribute about 60% of the protein requirements of Ghanaians. Total fish produced in 2014 from all sources including captured (marine and inland) and cultured (aquaculture) was 413,077 metric tonnes as against total import of 145,910 metric tonnes in 2013. Local production contributed about 74% of the total fish needs of the country. Further analysis shows that, out of the total production in 2014, marine fisheries accounted for about 70%, inland fisheries 21% and aquaculture 9% (Figure 2.10).

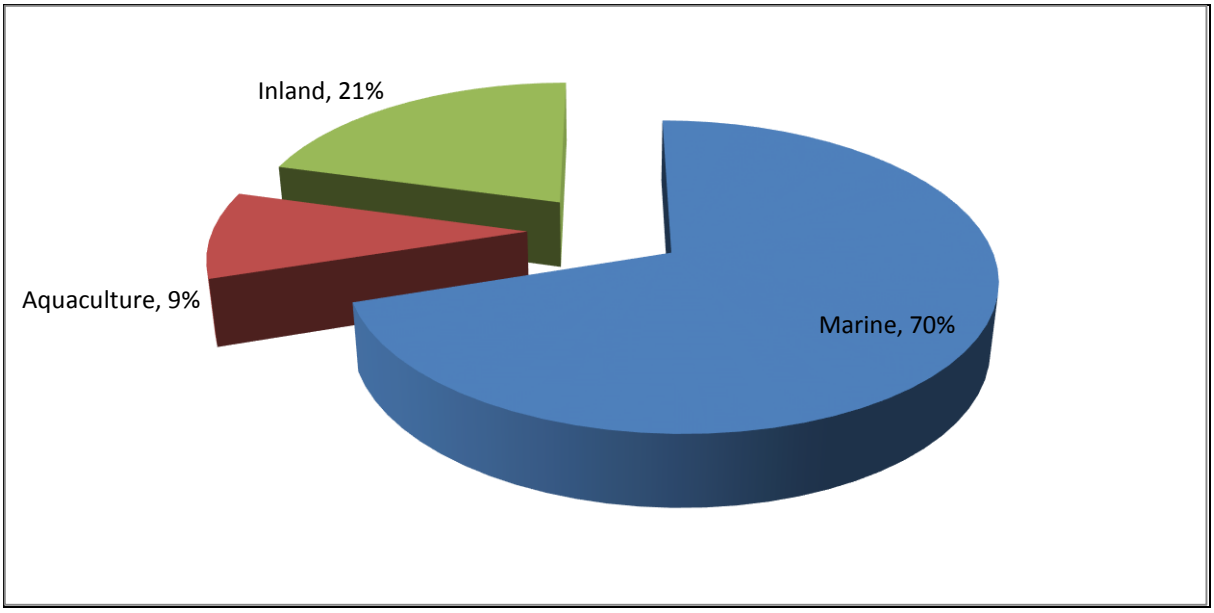


Figure 2.10: Domestic Fish Production by Sub-sectors

2.4.3.1 Marine Fish Production: Status of Ghanaian Marine Environment

The artisanal marine fishers are mostly local fishers who form the bulk of fishers in the marine sub-sector. Their operations contribute about 70% of the total marine catches. Therefore an increase or decrease in marine fish production has great impact on food security.

Unfavourable climatic conditions of the sea including a rise in sea surface temperatures, salinity and upwelling index has been contributing to a decline in fish stocks. Variations in temperature and salinity affect fisheries production, especially the small pelagics such as sardinella (*sardinella aurita*). These normally perform better in temperatures below 23℃ with salinity above 35ppt, and high upwelling indices. Upwelling index measures the intensity and duration of the strength of the wind forcing on the ocean. This affects the ocean's variability on the reproductive success of many fish and invertebrate species.

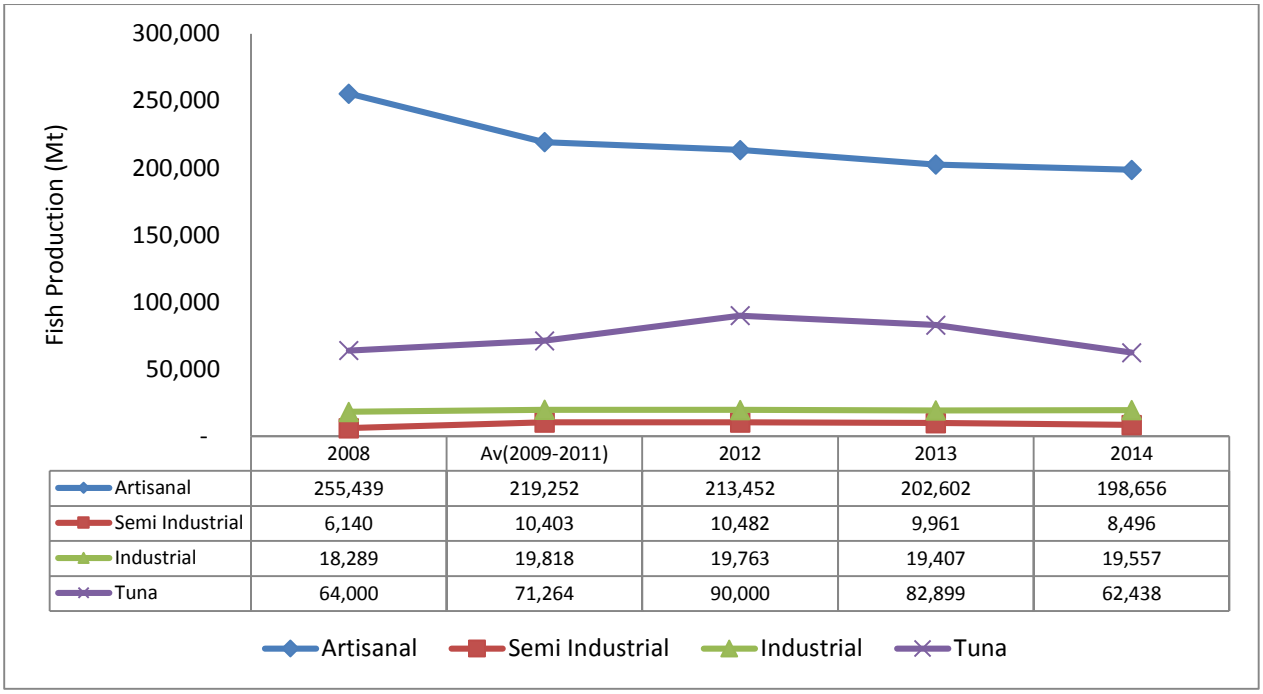
Over the past seven years, the salinity of the sea has generally been declining below the optimum of 35ppt. The sea surface temperature has been higher than the recommended 23℃ for optimal fish production since 2008. The upwelling index decreased from 2008 to 2011, increased in 2012 and nosedived again in 2014 (Table 2.4). Combination of the above variations in the climatic conditions of the sea-surface coupled with human activities drastically affected marine fish production causing a decrease over the seven year period. The decline in the volume of marine production can also be due to the depletion of some marine stocks which resulted from rampant use of illegal fishing gears, methods and activities especially by the canoe and semi-industrial fleets.

Table 2.4: Mean Temperature and Salinity Conditions

Year	Temperature	Salinity	Upwelling Index
2008	26.7	34.5	24.4
Av(2009-2011)	26.4	23.2	17.1
2012	26.1	33.3	24.2
2013	26.2	33.2	23.1
2014	26.4	33.2	21.1

Source: MoFAD, 2014 Annual Report

As part of the interventions to mitigate the challenges regarding the decline in marine fish production, the Ministry of Fisheries and Aquaculture Development (MoFAD) plans to purchase a research vessel to conduct regular stock assessment of all fish species of commercial value to align stock levels with the number of vessels.



	2008	Av(2009-2011)	2012	2013	2014
Artisanal	255,439	219,252	213,452	202,602	198,656
Semi Industrial	6,140	10,403	10,482	9,961	8,496
Industrial	18,289	19,818	19,763	19,407	19,557
Tuna	64,000	71,264	90,000	82,899	62,438

Figure 2.11: Trend of Marine Fish Production
Source: MoFAD

Production of Artisanal Fisheries

Fish production from artisanal fisheries has been declining within the marine sector. The average annual growth rate of the artisanal sub-sector over the period was 3.6%. The total fish landings from marine capture also experienced a negative average annual growth. It grew by negative 2.5% over the same period. On the other hand, fish landings from semi-industrial, grew averagely by 4.6% per annum.

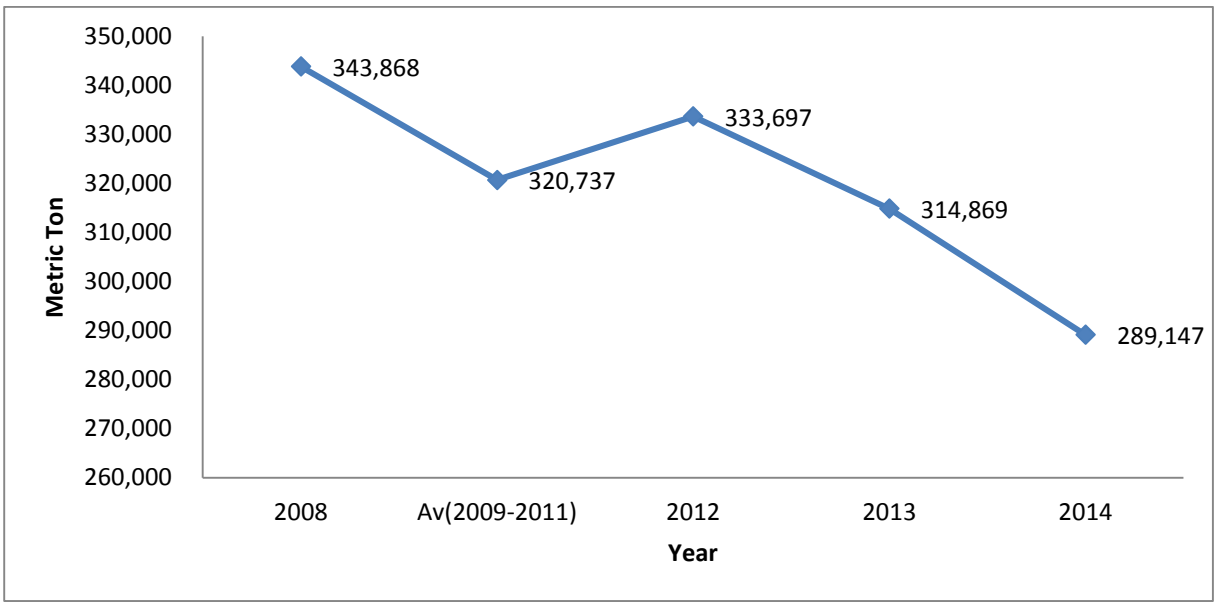


Figure 2.12: Trends in Total Marine Fish Production

2.4.3.2 Inland Fish Production

Inland fish production involves inland capture, cultured fisheries and aquaculture based fisheries. The main sources include; the Volta Lake, lagoons, reservoirs, irrigation dams and dug outs as well as other inland water bodies. The Volta Lake with a surface area of 8,480 square kilometres and 5,200 square kilometres shoreline forms the backbone of the total inland captured fish production, as it contributes about 90% of the total production from the sub-sector. Figure 2.13 shows the production trends from 2008 to 2014. Production increased by 30% in 2012 over 2008 and declined by 1.6% in 2014 compared to 2013.

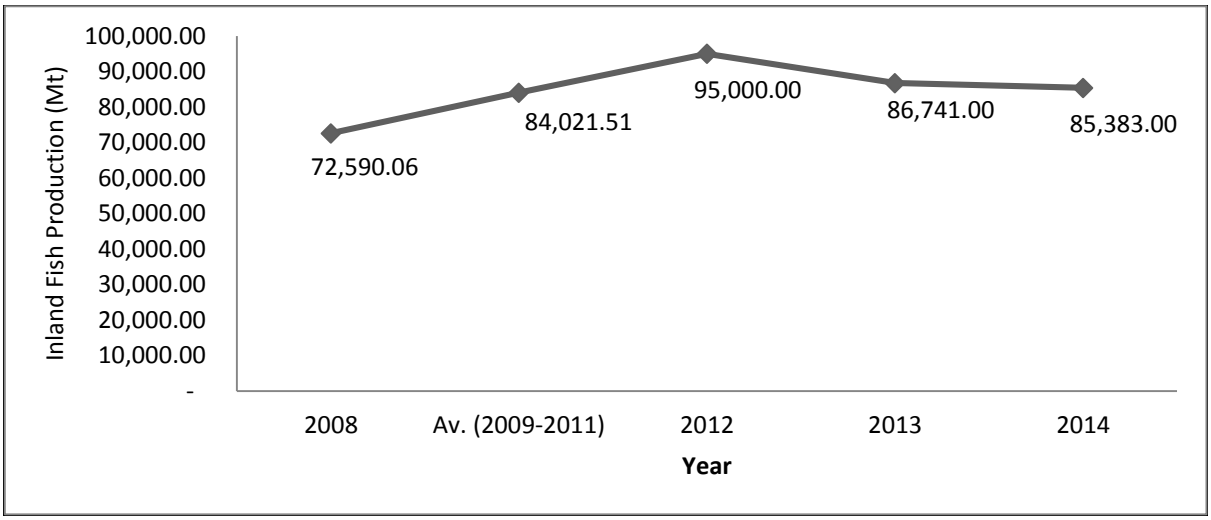


Figure 2.13: Trends in Inland Capture Fisheries Production (2008-2014)

Production of Cultured Fish

Cultured fish production is basically aquaculture production. This is usually obtained from cages, ponds, dams, dugouts and reservoirs. Aquaculture production has been on the rise since 2008 (Figure 2.14). This was largely as a result of government's strategy of investing in the aquaculture production.

In line with the government's intervention, MoFAD is developing a programme dubbed nucleus – out-grower and input support scheme to promote aquaculture. The implementation of the scheme will augment national fish production through aquaculture. Under the scheme, selected potential and existing fish farmers will be trained and provided with inputs.

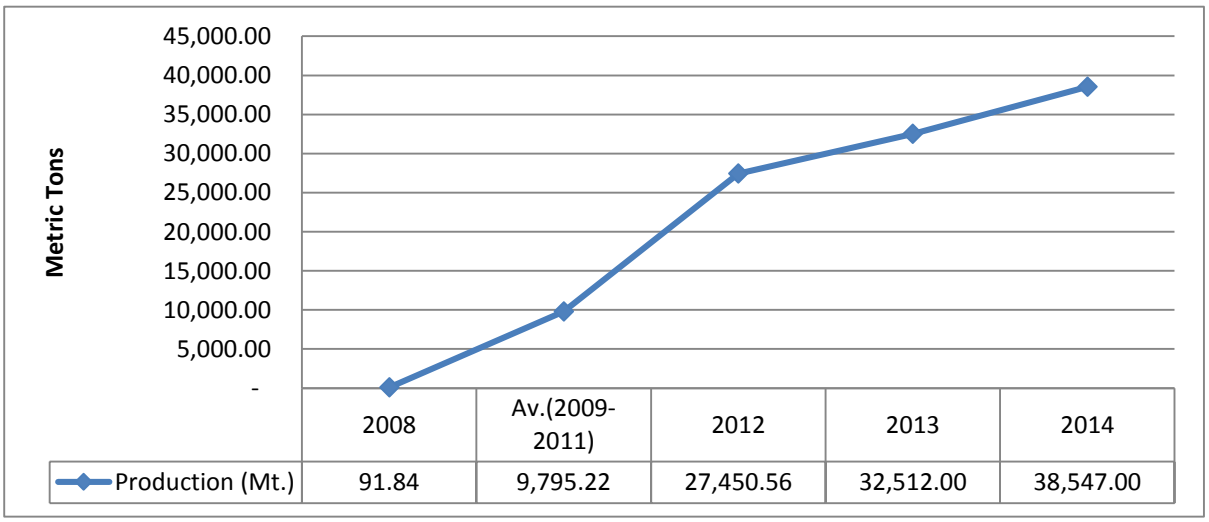


Figure 2.14: Trends in Aquaculture production

Source: MoFAD

2.5 Productivity Improvement

Improvement in productivity is a major component of the programme area of food security and emergency preparedness. To achieve food security as a country, the sector has put interventions in place to increase productivity of selected commodities through the development and adoption of improved technologies and other strategies such as fertilizer subsidy, establishment of mechanization centres and development of irrigation schemes, among others.

2.5.1 Productivity Improvement in Crops

Yield (productivity in crops) measures grains or seeds generated from a unit of land expressed as tonnes per hectare. The higher the result per crop, the better. The yield per major crop has been compared across periods. The 2014 yield figures show that there was a slight decline in yield in yam production compared to 2013 (Table 2.5). Yam has seen improvement in both the area planted and production. However, the rate of increase in production could not compensate for the increase in area planted. This is due partly to the erratic rainfall distribution and increase in prices of inputs. Rice, maize, and cassava, however, experienced percentage increases in yield due to the supply of improved planting materials together with good agricultural practices observed by farmers.

Research on crop improvement has been conducted with support from projects such as WAAPP and NRGP in the area of improved varieties of major staples as well as technologies. To support the productivity drive of the sector, the National Variety Release and Registration Committee (NVRRC) organized field visits and inspections to breeder fields. The activities of the committee centred on 4 different crops; maize, cowpea, cassava and pearl millet. This was to ascertain their performances for a possible release to farmers. This is expected to give farmers the opportunity to select varieties that are high yielding and adaptable to their environmental conditions.

So far, five varieties of pearl millet, four cowpea varieties with desirable yield and nutritional status have been developed and evaluated by the Savanna Agricultural Research Institute (SARI) of the Council for Scientific and Industrial Research (CSIR). In addition six (6) cassava clones and one (1) hybrid maize variety were also proposed for release by the Crops Research Institute (CRI). The first inspection has been carried out awaiting the final inspection. These varieties are expected to be released in 2015 after recommendations by the NVRRC.

Table 2.5: Trends of Yields of Selected Crops

Commodity	Baseline Mt/Ha	Achievement Mt/Ha				% Change (2014/2013)
Year	2008	Ave 2009 - 2011	2012	2013	2014*	
Maize	1.7	1.75	1.87	1.72	1.73	0.29
Rice	2.27	2.49	2.54	2.64	2.69	2.02
Cassava	13.51	15.08	16.75	18.27	18.59	1.78
Yam	14.17	15.08	15.57	16.78	16.63	(0.89)
Sorghum	1.27	1.26	1.21	1.14	1.14	-
Cowpea	1.17	1.76	1.78	1.24	1.24	-

Source: Computations from SRID Data **Provisional*

2.5.1.1 Production of Seedlings for Tree Crops

The Ministry continued to make quality seedlings available to farmers to improve the productivity of targeted high value crops. During the period, various quantities of improved citrus, mango, oil palm, cashew and coconut seedlings were supplied to farmers. This increased the area under tree crop plantation by a total of 7,556 hectares (Table 2.6).

Table 2.6: Production of Tree Crop Seedlings/Planting Materials

Tree Crop	No. of seedlings Produced 2013	Area that can be cultivated (Ha) 2013	No. of seedlings Produced 2014	Area that can be cultivated (Ha) 2014
Citrus	5,000	18	5,000	18
Mango	-	-	89,000	724
Coconut		-	24,000	150
Cashew	173,000	1,730	240,000	2,400
Oil palm	-	-	320,000	2,581
Rubber	-	-	343,393	1,683
Total	**178,000**	**1,748**		**7,556**

Source: GLDB, RADU, DCS

Hybridization intervention was also carried out in the tree crop sub-sector. The intervention covers coconut, cashew, cotton, oil palm and rubber. A total of 24,000 coconut seedlings were made available to 318 farmers in the Central and Western Regions. This enabled the farmers to plant an extra area of 150 hectares in 130 communities and therefore bringing to date a total of 282 hectares of resistant varieties planted.

A total of 240,000 improved cashew seedlings were also produced at the Wenchi Agricultural Station and Cocoa Research Institute of Ghana (CRIG) Station at Bole to enhance sustainability and increased production. The area under cashew cultivation was therefore increased by 2,400 hectares in 2014.

Two companies, Wienco and Olam established new cotton farms in Upper East, Upper West and Northern Regions. A total area cultivated was 10,784 hectares (Olam 3,381 hectares and Wienco 7,367 hectares).

Four (4) oil palm related companies; Twifo Oil Palm Plantation (TOPP), Benso Oil Palm Plantation (BOPP), Norpalm Ghana Limited (NGL) and Ghana Oil Palm Development Company Limited (GOPDC) continued replanting programs to replace aged trees while two new companies; 8 Degrees North Ltd and SOCFINAF Ghana Limited, invested in the production and processing of oil palm. About 320,000 seedlings were produced for planting on 2,581 hectares.

BOPP became the first plantation in Ghana and the second in Africa to become Sustainable Palm Oil Certified (RSPO) compliant. RSPO certification gives palm oil producers greater marketing flexibility for their products. RSPO requires industry players to produce in a sustainable, social, safety and environmental friendly manner. This is a way of preserving the living conditions of indigenous communities and the biodiversity of the ecosystem of project catchment areas.

Under the Rubber Out grower Plantation Project III, 7,884 hectares of existing rubber plantation was maintained. In a related development, Out grower and Value Chain Fund Project (OVCF) supported 588 out growers with an amount of GH¢ 8,532,332.00 to cultivate 988.3 hectares of rubber using a total of 201,613 seedlings. SOCFINAF Ghana, a subsidiary of SOCFIN Group cultivated a total of 40,800 seedlings covering 200 hectares in 2014. So far a total of 343,393 seedlings were produced which planted an area of 1,683.3 hectares in the year under review.

2.5.1.2 Fertilizer Usage

As alluded to earlier in this report, most Ghanaian farmers are peasant farmers who cultivate the same small piece of land continuously. Research shows that this phenomenon leads to depletion of nutrients in the soil. Effort towards productivity improvement in Ghana, therefore, also includes strategies to increase fertilizer

usage. This is also in line with a sub-regional effort to improve fertilizer use. In response, the government in the year 2008 initiated the Fertilizer Subsidy Programme. This allows the government through the private sector to import, distribute and sell fertilizer at subsidized and unified prices across the country. This programme has increased fertilizer importation over the period.

In general, the trend of fertilizer import has been on the increase since 2008 until 2014 (Table 2.7). Solid formulations of fertilizer decreased from 458,241 metric tonnes in 2013 to 207,109 metric tonnes in 2014. Liquid formulations, on the other hand, increased drastically from 264,649 litres in 2013 to 1,345,562 litres in 2014. The reason for the decline in the solid formulation was that government could not carry out the Fertilizer Subsidy Program in 2014 and farmers (mostly vegetable farmers on irrigation sites) had to resort to the use of liquid fertilizer formulations which was cost effective than the granular or solid fertilizers. For example, while 5 litres of liquid fertilizer is sold at an average cost of GH¢ 15.00 (3 is required per acre), three 50kg bags of solid fertilizer is sold at an average cost of GH¢ 105.00 (also 3 is required per acre) for the same size of land and crop. In addition to the price, the liquid fertilizer is well packaged to enhance handling and transportation. The increased demand therefore led to the fertilizer companies importing more of the liquid fertilizer.

The Fertilizer Subsidy Programme has contributed to the recent improvement in fertilizer usage in the country, from an initial 8.0kg/ha to about 20.0kg/ha. Arrangements are on the way to commence the 2015 fertilizer subsidy programme to meet the major farming season.

Table 2.7: Import of fertilizers 2011-2014

Year	Quantity of Import	
	Solid (mt)	Liquid (lts)
2008	187,030	-
2009	335,186	-
2010	368,705	-
2011	380,897	844,543
2012	669,951	2,692,580
2013	458,241	264,649
2014	207,109.73	1,345,562.10

Source: PPRSD, 2014 Annual Report

2.5.2 Livestock Productivity

To increase livestock productivity, the Ministry through its six livestock stations has been supplying improved livestock breed to farmers. One of these livestock stations, Amrahia Dairy Farm located in the Greater Accra Region is currently breeding Sanga, a dual purpose animal for the dairy industry. In addition, the farm is also engaged in crossbreeding through artificial insemination of the Sanga (indigenous) and Friesian/Jersey (exotic) to produce a cross breed which is high milk yielding. Whereas Sanga produced an average of 0.7 litres of milk a day, the cross breed yielded an average of 4.3 litres per day over the last production cycle. The Ministry under the Livestock Development Project (LDP) imported 12,000 doses of Friesian semen which is used for the artificial insemination. In 2014, a total of 301 cows; 89 on Farm (Amrahia) and 212 on private farms were inseminated. This strategy will produce more of the cross breeds which will ultimately result in improved milk yields in the country.

The six Livestock Breeding Stations of the Ministry also carried out their mandate of livestock breed improvement. Within the year, a total of 861 livestock of various species were produced and 959 supplied to farmers to aid increased productivity as shown in Table 2.8. In general, the supply of improved breeds reduced by 17% compared to 2013. This was reflected in the reduction in the number of rabbits (59%), Ashanti Black Pigs (68%) and sheep (4%) supplied. In addition, 550 small ruminants were procured and

distributed to 90 farmers in Central, Eastern, and Western Regions and also Kintampo Goat Breeding Station for breeding. The decrease in animals supplied is ascribed to disruptions in the implementation of the farm's breeding and feeding programmes as a result of delay in release of funds to the Livestock Stations.

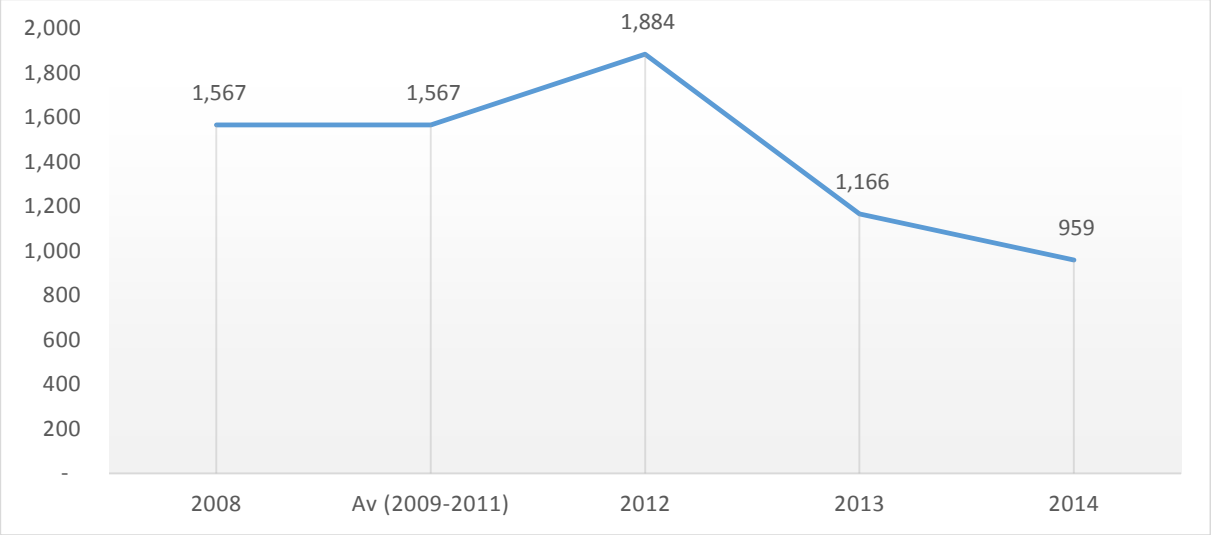


Figure 2.15: Total Improved Breed of Animals Supplied to Farmers
Source: Animal Production Directorate

Table 2.8: Improved Breed of Animals Produced and Supplied to Farmers by Livestock Type

Species	Birth				% Achieved		No. of Breeding stock supplied	
	Target 2013	Actual 2013	Target 2014	Actual 2014	2013	2014	2013	2014
Pigs(LW)	759	489	350	305	64.4	87.1	201	202
Sheep	743	698	250	171	94	68.4	363	347
Goats	218	152	200	146	70	73	44	118
Cattle	87	59	60	41	68	68.3	53	115
Rabbits	364	238	230	115	65.4	50	163	67
Pigs(ABP)	312	242	150	83	77.6	55.3	342	110
Total	**2483**	**1878**	**1240**	**861**	**439.4**	**402.1**	**1166**	**959**

Source: Animal Production Directorate, 2014 Annual Report

In a related development, the Guinea Fowl Project generated and disseminated appropriate technologies to increase productivity. An input support was provided for beneficiary farmers as start-up capital. With support from WAAPP, eighty beneficiary farmers (40 incubator operators and 40 partners) were supplied with 40,000 guinea fowl eggs, 9.0 metric tonnes of feed and 32,000 doses of Gumboro Disease Vaccine. As part of the starter-up pack, they were given 64,000 doses of Thermostable NDI-2 Newcastle Disease Vaccine, 64,000 doses of fowl pox vaccine, 10kgs of poultry dewormer, and 100kgs of antibiotics/vitamins as start-up capital to commence production.

Results of monitoring of the 40 guinea fowl project districts in the 3 regions of the north revealed that 34 farmers have successfully hatched their eggs at various hatchability rates. About one quarter of these farmers recorded average hatchability rate of 70%. This rate compares with rates of between 0% - 15 % recorded before the intervention.

Figure 2.16: Newly hatched keets in an incubator

2.5.3 Productivity of Fisheries

The government undertook interventions to increase the availability of high quality fingerlings that are early maturing and can withstand harsh weather conditions to farmers throughout the year.

2.5.3.1 Fingerling Supply and Availability

Fingerling production increased significantly from year 2010 to 2013. However, this production level dropped in 2014 by about 18%. Over the years, supply and availability of fingerlings to fish farmers have been inadequate due to the low number of hatchery operators. Even though there was an increase in the operations of private hatcheries, the supply could not meet the increasing demand (Figure 2.17). This was as a result of the increased number of fish farms that sprang up during the period.

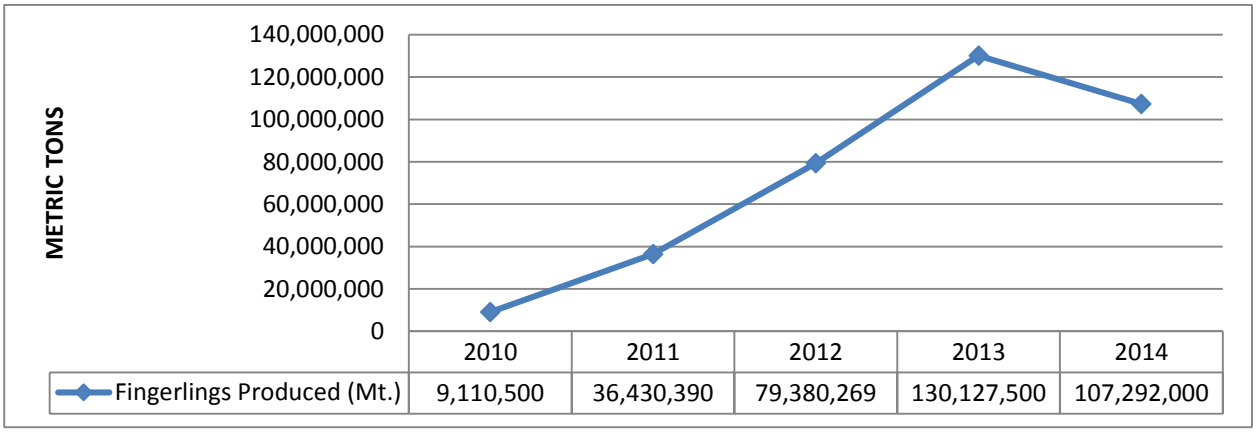


Figure 2.17: Trend in Fingerling Production (mt)

Source: MoFAD

2.6 Imports of Crops, Meat and Fish

Ghana is self-sufficient in maize, cassava, yam and most of the other food staples as reported earlier in this report. However, the country imports volumes of selected commodities such as rice, tomato, fish, poultry and meat products to complement national demands.

2.6.1 Food Crop Production and Imports

As consumers become wealthier and more ethnically diverse, they demand variety, quality, and convenience in their consumption. Food production, processing and packaging systems need to develop to meet these demands. In the absence of this development (or when the pace is slower than excepted), food is imported to fill the gap. A typical import commodity in Ghana is rice.

During the year under review, a total of 413,587 metric tonnes (provisional figure) of rice was imported into the country out of which about 20% were on transit to neighbouring countries. Total rice available for consumption stood at 754,698 metric tonnes.

Table 2.9: Rice Production and Import (metric tonnes)

Item	2009	2010	2011	2012	2013	2014*	6-Year Average (2009-2014)
Transit	76,797	64,030	108,693	101,717	128,867	82,717	93,804
Imports Available	307,188	256,122	434,772	406,870	515,467	330,869	375,215
Domestic Milled Rice	270,094	339,206	320,142	331,898	392,972	423,829	346,357
Total Rice Available	577,282	595,328	754,914	738,767	908,439	754,698	721,571

Source: Computations from SRID Data **provisional*

2.6.1.1 Domestic Production and Import of Rice

Averagely, over the past six year's period (2009 -2014), Ghana's local production satisfied at least 48% of her national rice requirements.

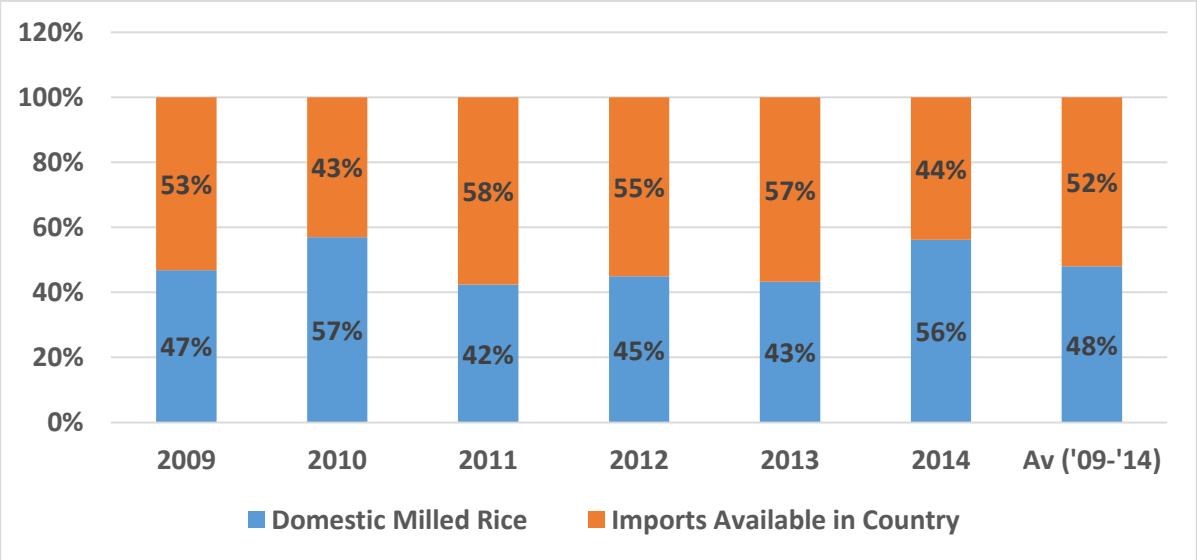
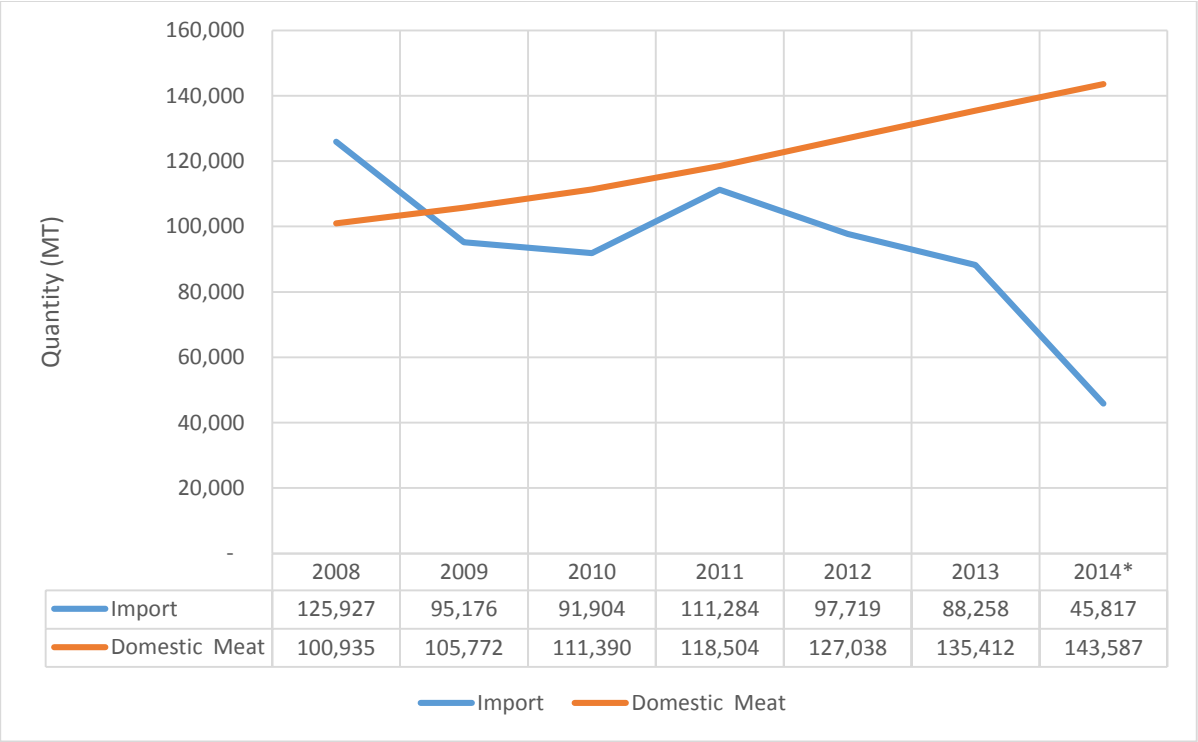


Figure 2.18: Domestic production and Import of Rice 2009-2014

2.6.2 Domestic Supply and Imports of Meat

There has been a decline in the importation of meat which is partly attributed to decreased demand for meat and meat products and high cost of meat. In the same way, the importation of dairy products also decreased (-10.86%) in 2014 generally as a result of exchange rate volatility during the year. The Ministry's crossbreeding programme under the Livestock Development Project especially by Amrahia Farm has been intensified to breed and distribute high milk producing cows to increase local production and reduce import volumes.



	2008	2009	2010	2011	2012	2013	2014*
Import	125,927	95,176	91,904	111,284	97,719	88,258	45,817
Domestic Meat	100,935	105,772	111,390	118,504	127,038	135,412	143,587

Figure 2.19: Domestic production and Import of Meat 2008-2014

Estimates of domestic meat production and quantity of meat import shows, Figure 2.19 that quantity of domestic meat produced keeps increasing through the period (2008 – 2014). This has created a gap between quantities of meat imported and domestic meat production. The gap keeps widening especially after year 2010. In the year 2014, quantity of meat imported experienced a dramatic dip whilst the local production increased. The remarkable reduction in quantity imported is because of exchange rate challenges experience. Averagely, the country over the period met about 60% of its meat requirements annually from local production.

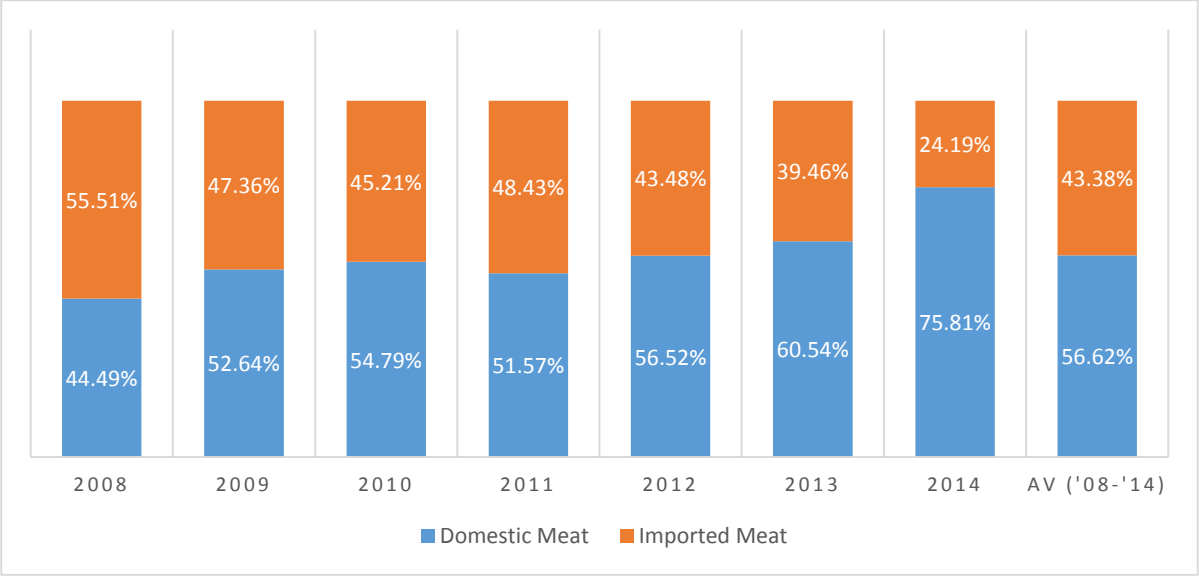
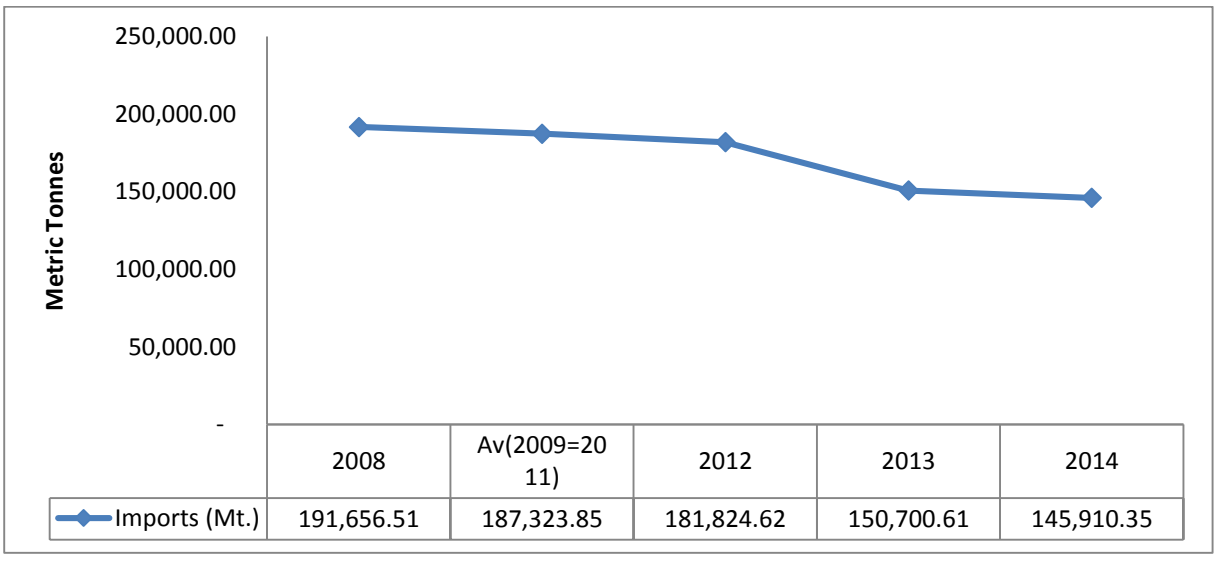


Figure 2.20: Share of Domestic Meat Production against Meat Import
Source: Computation from SRID Data

2.6.3 Fish Production, Export and Imports

During the period under review, the Government continued to permit some importation of fish into the country. This is to bridge the country's fish requirement deficit, improve upon fish availability and nutritional needs of the Ghanaian public. Importation of fish is highly a controlled and monitored activity by the Fisheries Commission. Fish imports are mainly from Mauritania, Namibia, Spain and Holland. Imported species were mainly horse mackerel, mackerel, sardines and other mixed species from Africa.

The trend in fish imports for the period 2008 to 2014 continued to decline. In 2014, 22 fishing companies (trawlers and tuna vessels) imported a total of 145, 910 metric tonnes of fish and fish products valued at US$ 120.4 million compared to 2013 imports of 150,701metric tonnes by 27 fishing companies valued at USD 135,118,501. This represents a decrease of 3.2% of quantity imported in 2014 as against that of 2013. The reduction in imports was because of stricter regulatory activities implemented during the year.



	2008	Av(2009=2011)	2012	2013	2014
Imports (Mt.)	191,656.51	187,323.85	181,824.62	150,700.61	145,910.35

Figure 2.21: Trends in Fish Imports (2008 – 2014)
Source: Fisheries Commission

Table 2.10: Annual Imports and FOB values (2008-2014)

Item	2008	Av(2009-2011)	2012	2013	2014
Imports (MT)	191,656.00	187,323.85	181,824.62	150,700.61	145,910.35
FOB ($)	47,826,463.00	102,981,755.64	158,974,508.86	135,118,500.77	120,443,785.00
Estimated Price per tonne	249.54	549.75	874.33	896.60	825.46

Source: Fisheries Commission, 2014 Annual Report

Table 2.11: Quantity and Value of Fish exports

Item	2010	2011	2012	2013	2014*
Quantity (mt)	8,463.12	44,144.82	62,984.07	56,626.25	36,121.375
Value (USD)	4,503,545.48	254,429,334	209,246,963	209,795,314	77,981,412.05

Source: Fisheries Commission, 2014 Annual Report **Provisional*

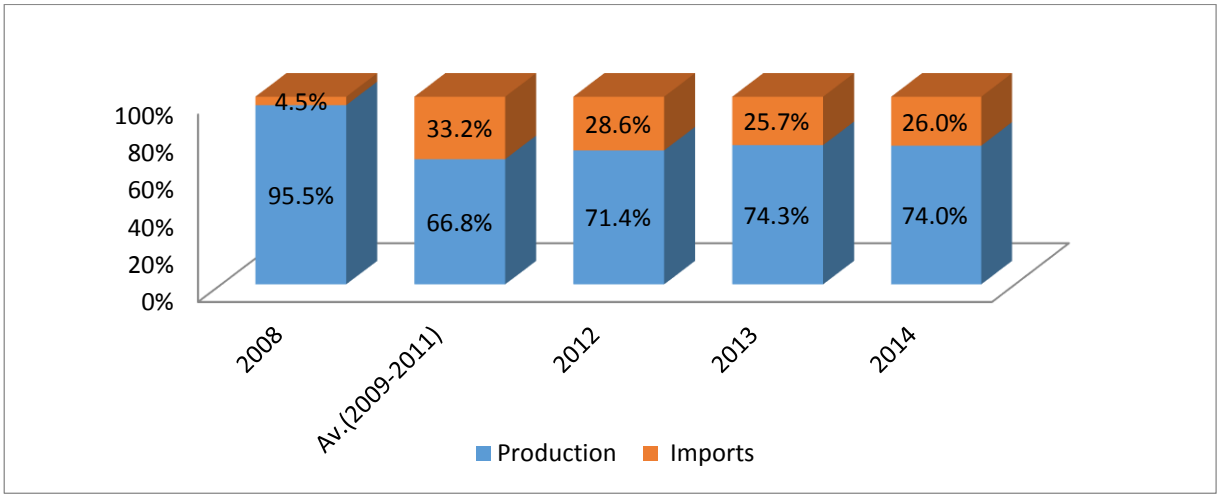


Figure 2.22: Percentage local fish Production against Imports

2.7 Support to Improved Nutrition

Ghana joined the Global Scaling-Up Nutrition (SUN) Movement, a global initiative and CAADP nutrition programme, at the regional level, in order to eliminate malnutrition. The SUN Movement aims at significantly reducing under nutrition in participating countries within a three-year strategy (2012-2015). As part of the implementation of the SUN Movement, a National Nutrition Policy (NNP) has been developed to provide a framework for implementation of nutrition interventions. With this framework, all stakeholders whose activities border along nutrition improvement in the country are to draw up their sector action plans, towards eliminating malnutrition. The Ministry through the Directorate of Women in Agriculture Development (WIAD) is currently leading the process to prepare an agricultural sector action plan to operationalize the NNP.

Subsequently, the Ministry collaborated with FAO to conduct a study entitled "Assessing nutrition capacity in the agricultural sector: Ghana case study" to determine the capacity of MoFA in delivering nutrition-sensitive agriculture. It was concluded from the study that inadequate understanding of the role of nutrition in agriculture is a limitation to strengthening nutrition capacity within MoFA.

In response to this, the directorate of WIAD with support from FAO and WFP organized a national workshop to build capacity of participants on nutrition-sensitive agriculture. The aim was to enlighten

participants on malnutrition situation in the country, the role of agriculture in improving health through good nutrition and to develop nutrition-sensitive agriculture action plan. This workshop was attended by 89 participants (46 males and 43 females) mainly, from the Ministry and other stakeholders.

2.7.1 Levels of Underweight and Stunting in Children

The Ministry directorate of WIAD carries out sensitization workshops and other practical sections to demonstrate simple but very-cost effective means of utilizing locally produced commodities e.g. soy and groundnut to improve nutrition in children . The main source of measure of this indicator is the Ghana Demographic Health Survey (GDHS). The last survey which was conducted in 2008 showed improvement in nutritional status of children under five.

There has not been GDHS since 2008 and therefore, Multiple Indicator Cluster Survey (MICS) which is available is relied upon. MICS is the result of survey conducted by UNICEF in collaboration with Ghana Statistical Service in 2011 which also shows that there is a general improvement in each of the indicators compared to the indicators in the GDHS 2008. For instance, cases of underweight reduced by 1%, stunting level reduced by 5%, wasting by 3% and overweight by 2%. The improved nutritional status can be attributed to the nutrition-based education, dietary diversification and bio-fortification programs of the Ministry. It must be noted however, that the methodologies employed by GDHS and MICS may be different.

2.7.2 Household Food Insecurity

Household food security of farmers in Ghana differs from one ecological zone to the other. Households in the Guinea Savannah zone are more likely to face food insecurities than their counterparts in the other ecological zones. These insecurities are more pronounced in female-headed households. As high as 70% of female-headed households in the guinea savannah zone faced difficulty in meeting their food needs in the previous 12 months compared to 42% of male-headed households who reported such challenges.

The transitional zone appears to be the most food secure among the farm households surveyed, with about 67% encountering no food challenges in the period. It should be noted further that in both the transitional and coastal savannah zones, more male-headed households encountered food insecurity in the period than female-headed households. The results nevertheless suggest that, an appreciable number of farmers, regardless of gender, across the ecological zones encounter food security challenges.

2.7.2.1 Availability and Access to Food Outlets

A critical dimension of food security is its availability. High numbers of food outlets in a given community, village, district or region is a good proxy of food accessibility. Food outlets increased on average by 10% in 2014 compared to 2013. However, that of Upper East Region reduced by 20%. The reduction in the number of market outlets is attributed to better competitive price offered by urban markets which attract sellers and buyers who usually patronise other rural community markets in the region. In general, the increase in market outlet numbers is an indication of physical accessibility, which means community members can easily get access to these outlets to sell or purchase food items.

2.8 Diversification of Livelihood Options with Off-Farm Activities

Rural Non-Farm Economic Activities (NFEAs) are gaining prominence in most developing economies due to the increasing inability of the farm sector to adequately support rural livelihoods. Off-farm income is an important strategy for meeting subsistence needs as well as absorbing shocks to agricultural income. Research has shown that participation in off-farm activities empower rural and less endowed farmers especially women. METASIP aims to support 5% of people falling below the extreme poverty line in off-farm livelihood alternatives by 2015.

2.8.1 Off-farm Livelihood Activities

Off-farm activities focus on supporting establishment of agro processing, Micro and Small- Enterprises (MSEs), targeting women and the youth. It seeks to identify and train vulnerable groups within communities in entrepreneurial skills. The concept also identifies viable markets for off-farm livelihood opportunities (e.g. soap and creams from agricultural by-products, special herbs, honey, snail, mushroom, grass-cutter) and analyse viable value chains on livelihood opportunities.

In order to bridge the gap between farming and off-farming seasons income level, the Government of Ghana (GoG) through the Ministry of Trade and Industry's (MoTI) Rural Enterprises Programme (REP) and Ghana Social Opportunities Project (GSOP), the Ministry of Food and Agriculture's NRGP and WIAD put in place interventions to mitigate the stress on on-farm household income during off-farming seasons.

Trainings organised by WIAD in the year 2014 on processing and value addition to crops, resulted in improvement in the pepper (at Nkwanta North and Akatsi South Districts) and ginger (at Jasikan) industries in the Volta Region . For example ginger powder production, packaging, branding and marketing, provided farmers and the youth with gainful employment during off-farming season. Value addition to ginger raised the income level of Lorlornyo Ginger Processing Group of ten members (3 male and 7 female) by 41% (from GHC495.00 to GHC 700.00) in the year under review.

2.9 Gender Mainstreaming

Gender mainstreaming advocates affirmative action in the recruitment and training of staff and also operations with clients. It also ensures gender data disaggregation during the collection, use and maintenance of data at all levels of agricultural activities. This is to promote systematic and regular gender data analysis of agricultural programmes.

MoFA acknowledges the tremendous contributions of the diverse groups (men, women, youth, PLWD, among others) in the agricultural sector. To address the gender inequalities and improve the contributions of these diverse groups, a gender strategy; Gender and Agriculture Development Strategy (GADS) was developed to integrate and mainstream gender concerns into its programmes and projects. The GADS has been implemented over the years, since 2004 with an assessment in 2008. The strategy recommends a review after three years of implementation.

In 2014, with financial support from WAAPP and technical coordination from WIAD, a review of the GADS was initiated to reflect the current gender and social protection situations in the sector. As part of the output of the review, a report on the gender analysis of the agricultural sector and a Final Draft of the Revised GADS (GADS II) has been delivered. The Revised GADS (GADS II) will inform the gender mainstreaming strategies of the sector.

The result of an economic activity survey undertaken (disaggregated by gender) shows that in some ecological zones, about equal proportions of females and males carry out the same types of activities. For example, about 86 % of female and 89 % of male farmers in the coastal zone are into the cultivation of food crops, with about 14 % and 12 %, respectively working in the government sector.

Similarly, and as illustrated in Table 2.12, female participation was dominant in all the gender mainstreaming activities from 2011 to 2014. This in general shows that more women are being reached with modern production technologies and will invariably translate into enhanced food security and increase growth in incomes for farming households. However, the actual number of females reached show a decreasing trend from 9,298 in 2012, 8,339 in 2013 and 6,478 in 2014.The reduction in the number of female participants can be attributed to repeating topics treated during the period. Some of the females have already participated in the technologies and are now practicing them.

Table 2.12: Gender Mainstreaming Activities Implemented GADS-Gender and Agricultural Development Strategy

GADS ACTIVITIES	NO. OF PEOPLE REACHED															
	2011				**2012**				**2013**				**2014**			
	M	**F**	**%F**	**TOTAL**	**M**	**F**	**%F**	**TOTAL**	**M**	**F**	**%F**	**TOTAL**	**M**	**F**	**%F**	**TOTAL**
Gender Training for MoFA Staff	113	84	43	197	104	80	43	184	468	625	57	**1,093**	198	96	33	**294**
Gender Training for Farmers	734	941	56	1,675	1,576	2,279	59	3,855	1,594	2,788	64	**4,382**	594	788	57	**1382**
Training on Home and Farm Resource Management	1,484	3,378	69	4,862	1,717	5,152	75	6,869	1,071	1,158	52	**2,229**	1,000	1,891	65	**2,891**
Facilitation for Financial Access	348	726	68	1,074	385	1,477	79	1,862	105	138	57	**243**	16	362	96	**378**
Training on Diversification and Development of New Recipes and Products (e.g. soya, potato yoghurts)	35	82	70	117	19	310	94	329	25	373	94	**398**	121	923	88	**1,044**
Total	**2,714**	**5,211**	66	**7,925**	3,801	9,298	71	**13,099**	3,364	8,339	71	**11,703**	3,142	6,478	67	**9,620**

Source: WIAD

Involving the youth in planning and implementation of sector activities is critical. Key activities were undertaken to enrol the youth into agricultural programmes and projects. The Ministry through an affirmative action implemented a youth in irrigated agriculture programme. As a result of the huge success of demonstrations conducted on the production of various vegetables and fruits, particularly butternut squash and strawberry, a large number of youthful FBOs have expressed interest and desire to participate in the programme

Thirty FBOs made up of 505 youth farmers (279 males and 226 females) in the Upper West Region participated in the use of pump irrigation to cultivate fruits and vegetables. Table 2.13 summarizes the number of young farmers participating in the programme.

Table 2.13: Number of Youth in Irrigated Agriculture Programme UWR, 2013/2014 Season

No	District	No. of Groups	Group Membership			Area cropped (acres)
			Male	Female	Total	
1.	Sissala West	5	97	129	226	23
2.	Nandom	5	25	25	50	8
3.	Lawra	5	34	16	50	20
4.	Jirapa	5	45	26	71	58
5.	Nadowli/Kaleo	5	46	19	65	7.5
6.	Wa West	5	32	11	43	8
	TOTAL	**30**	**279**	**226**	**505**	**124.5**

Source: NRGP, 2014 Annual Report

Responding to the success of the youth in Irrigated Agriculture Programme initiative, a number of youth groups have requested to partner NRGP in reaching out to more youth groups in 2015. These groups operate under one umbrella organization, MES-DEL Investments, located at Tamale. The group currently organizes more than 8,000 farmers. MES-DEL Investments provides training, mentoring, linkage to market opportunities and business development services to its constituent FBOs, details are shown in Table 2.14.

Table 2.14: NRGP/MES-DEL Farmer Groups in Youth in Irrigated Agriculture Programme

No	Region	No of Youth Groups	No of Farmers	Area (acres)	Major Crop	Water Sources
1	Northern	23	1,226	1,548	Leafy vegetables, Strawberry, cucumber and Pepper	Small scale dams and rivers
2	Upper East	17	3,680	3,237	Onion, Pepper, Okro and Butternut Squash and strawberry	Small scale dams, rivers
3	Upper West	7	1,150	950	Butternut squash, Chillies, leafy vegetables	Small dams, rivers and
4	Brong/Ahafo	10	2,732	3,792	Watermelon, Pepper, okro and leafy vegetables	Rivers, Rain-fed and dams
	TOTAL	**57**	**8,788**	**9,527**		

Source: NRGP, 2014 Annual Report

2.10 Food Storage and Distribution

A major challenge that continues to threaten Ghana's food security is the loss of harvested commodities to poor post-harvest management practices by farmers at the household level as well as lack of sufficient large scale storage facilities. The Ministry seeks to address this challenge by developing effective post-harvest management strategies, particularly storage facilities, at household and community levels. A catalogue of storage facilities showing their location and sizes is currently being documented by the Ministry. In addition, NRGP and GCAP are constructing a number of warehouses in the SADA zone.

2.10.1 Post-Harvest Losses along the Value Chains

According to the NRGP, procurement process for nine (9) warehouses and four (4) pack houses have been completed and contracts have been awarded, with construction works in progress. Details of the constructed warehouse and pack house locations are provided in Table 2.15. Also, the GCAP has contracted a consortium of firms to conduct pre-feasibility studies for the construction/operation of warehouses in the SADA Zone under PPP arrangements for 22 Nucleus Farmers under the Matching Grant Scheme. The consultants have since produced their inception report.

Table 2.15: Location of Warehouses and Pack houses

Name of Lot	District	Region	Type		
			Warehouse	Pack house	Total
Badu	Tain	Brong Ahafo	1	-	1
Sawla	Sawla-Tuna-Kalba	Northern	1	-	1
Gushegu	Gushegu-Karaga		1	-	1
Chereponi	Chereponi		1	-	1
Kukobila	Savelugu-Nanton		-	1	1
Wiesi	Builsa South	Upper East	1	-	1
Garu	Garu-Timpane		1	-	1
Tono	Kasena-Nankana		-	1	1
Pwalugu	Talensi-Nandam		-	1	1
Sombo	Nadowli-Kaleo	Upper West	1	-	1
Eremon	Lawra		1	-	1
Gwollu	Sissila West		1	-	1
Yagha	Jirapa		-	1	1
Total			**9**	**4**	**13**

Source: NRGP

To reduce the post-harvest losses and also improve the quality of cassava flour, further testing of the GRATIMP HQCF Dryer by St. Baasa Agro Industry was carried out in order to make it perfect. This was done after providing two additional fans in the drying chamber in addition to two existing ones.
The following parameters were realised during the testing;

1. Wet moisture content = 62.3%
2. Average total dry weight per batch (64 x 3) = 192kg
3. Average dry moisture content of product = 11.04%
4. Drying temperature = 87^0C
5. Drying time = 3hrs.
6. Quantity of gas used = 20kg
7. Cost of 1kg of gas = GH¢3.38
8. Cost of gas to dry 1 batch of product = GH¢67.59

It was observed that, the products dried within three hours as compared to six hours in the first case when only two fans were fixed into the drying chamber. The product quality was also enhanced since less drying time was used.

In a related development, a prototype equipment (hydraulic press) manufactured by the Rural Technology Services Centre (RTSC) Mampong has been identified by the Ministry as suitable for use in cassava processing. In collaboration with RTSC Mampong, the hydraulic press is being promoted for use and it was necessary to train Rural Technology Foundation (RTF) technicians to fabricate the tried and tested prototype in their respective areas of operation. A training programme was conducted at the RTSC at Mampong Ashanti with resource persons from the Mampong RTSC to train the RTF technicians in the fabrication of the prototype hydraulic press.

To at least maintain the gains made in the fight towards improving the fortunes of farmers in 2013, construction of five Good Practice Centres (GPCs) was started. Four of the five GPCs have been completed and handed over to the clients. The fifth GPC is yet to be completed. The upgrading of two processing enterprises (Christaa Ventures and Oseikrom Farm and Agro Ventures) by GRATIS, Sunyani and Assin Foso RTF respectively has also been completed. Consultants have been engaged to carry out studies on the effectiveness of the GPC models and the impact of the processing equipment. Inception report has been presented by the consultants and work is ongoing. The final report of the study was expected by the end of November 2014.

In the meantime, financial analysis reviews were carried out on 18 existing GPCs and all the GPCs have been found to be profitable. According to the analysis, the yam farmers in the Kpandai District are very efficient in their production activities. For instance on average, their total cost to revenue ratio for 2013 was 36.1%. This shows that an investment of GHC1.00 in production will yield GHC2.77.

2.10.2 Grain Storage Capacity Development

During the period under review, the grain storage capacity development interventions emphasised on building human capacity. This involved both public and private sector operators. Table 2.16 indicates that persons trained in 2014 increased by 27% over 2013 figure. Similarly, the number of male beneficiaries saw an increase of 49% in 2014 compared with 2013. However, the number of female beneficiaries declined by 4% in 2014 compared with 2013. The skills acquired during the training were to help reduce post-harvest losses in the long run.

Table 2.16: Private Sector operators trained in Grain Storage Activities

Year of Training	Training Topics Treated	No. of Beneficiaries			Impact of the Training
		Male	Female	Total	
2011	Post-harvest handling / Warehouse Receipts System	540	195	735	Improved knowledge on grain quality
2012	Post-harvest handling / Warehouse Receipts System	5,418	3,049	8,467	Improved knowledge on grain quality
2013	Post-harvest handling / Warehouse Receipts System	1,357	905	2,262	Improved knowledge on grain quality and benefits of Warehouse Receipt System
2014	Post-harvest handling / Warehouse Receipts System	2,018	865	2,883	Improved knowledge on grain quality and benefits of Warehouse Receipt System
	Total	**9,333**	**5,014**	**14,347**	

Source: Ghana Grains Council

Table 2.17: Private Sector operators trained in Grain Storage Activities

Year of training	Training Topics Treated	No. of Beneficiaries			Outcomes
		Male	Female	Total	
2008	Training of traders and AEAs -the stocking maize in grain pro-coons	36	8	44	Grain stockists in grain pro – cocoons increased
2009	Trial and training of farmers on the use solar dryers	16	18	34	Number of users of solar dryers increased
	Training on construction of yam barns	20	27	47	Number of artisans trained in Yam Barn construction increased
2010	Training of agro-processing machinery operators	35	45	80	Quality improved Output increased
2011	Training of farmers, traders and stockists trained on the use of super grain bags	18	39	57	Use of improved technology (super bags) increased
	Sensitisation of hygienic methods of drying of agricultural commodities	21	38	59	Knowledge of stakeholders on drying methods increased
2012	Training on the storage and management of in grain pro-cocoons	25	35	60	Skills trainees improved
2013	Training on the use of Super and Triple Grain storage bags as storage facilities	45	20	65	The training was aimed at curbing post-harvest losses during grain storage
2014	Training of farmers and traders on the use of Super Grain Bags and Triple Super Bags as storage facilities for grains & cereals	141	203	344	Post-harvest losses during grain storage reduced
	Training on maintenance of improved yam barns	13	14	27	Post-harvest losses of yam minimised

Source: AESD

The total number of beneficiaries trained in 2013, more than quadrupled in 2014. The beneficiaries were taken through a number of training sessions to equip them with knowledge, skills and information on the operation and handling of various post-harvest facilities. The high participation rate reflects the pro-activeness of the Ministry in taking advantage of several platforms to train on grain storage activities.

As part of the Grain Quality Improvement and Management Programme, a total of 1,265 persons (1,132 males and 133 females) were trained on grain quality management with respect to mycotoxin management and control. Participants were drawn from farmers (FBO representatives), extension agents, input dealers, aggregator, representatives of District Value Chain Committees (DVCCs) and Farmer Associations (FAs). This was to improve the quality of grain in Ghana.

These FBO representatives will collaborate with their extension officers and other trainees, to reach out to other FBO members with the skills and knowledge acquired. The total number of farmers, extension officers and other service providers trained on mycotoxin management as at December, 2014 stands at 50,458. An estimated 2,531 FBOs (50,620 farmers) will be reached with the knowledge and skills acquired in ensuring the production of good quality grains for premium market price, healthy and safe household consumption.

Processing and storage of seed is a continuous service provided to seed growers, farmers and other agents in the seed industry. In the year under review, only 16.1 metric tonnes of maize was processed and stored at Winneba. No cowpea, rice or soybean was processed due to left over stock from the previous season's production.

2.11 Irrigation Development and Management

In Ghana and several tropical countries, the challenge of erratic rainfall is a major factor in determining crop productivity. In the long run, erratic rainfall creates variations in the duration of usual planting season. The variations in the weather pattern are partly due to climate change. Effective irrigation system has the potential to mitigate the devastating effect of climate change on agricultural performance.

The Ghana Irrigation Development Authority (GIDA) embarked on a number of projects, to increase areas under irrigation and also increase farmers' productivity on irrigation fields. The results of some of these projects implemented in collaboration with other institutions would be realized in the ensuing year. In order to achieve the set objective of improving productivity, the Authority rehabilitated a number of formal schemes, dams and dugouts. In addition, GIDA sourced funds from the EDAIF for the construction of new schemes and rehabilitation of a number of existing schemes that had deteriorated. Generally, the Ministry categorizes irrigation into two; the formal and informal.

2.11.1 Formal Irrigation

Formal irrigation is an irrigation scheme that is reliant on some form of permanent irrigation infrastructure and is funded by the public sector. Under this scheme, Government provides the headwork, conveyance and primary distribution infrastructure, while the private investor provides secondary distribution and water application machinery and equipment.

In 2014, area developed under formal irrigation remained unchanged as the previous year at 10,687.50ha. However, an increase of 0.4% in crop production was observed during the period on these schemes. The overall performance of vegetable production increased by 101% and that of cereal, however, decreased by 21% over

2013 figures. This is as a result of the introduction of high value vegetable crops such as butternut squash and bird's eye chilli pepper which attracted many farmers away from cereal production into the cultivation of vegetables. Average yield for notable crops are rice 4.7 tonne per hectare, tomato 13.8 tonne per hectare, pepper 6.7 tonne per hectare and okro 8.6 tonnes per hectare.

Total area cropped in the first cycle decreased by 31% over the previous year's figure. Land intensification ratio decreased almost proportionately by 31%. This resulted in food production decrease over last year even though on a disaggregated scale there were increments in vegetable and legume production by about 59% and 92% respectively. The decrease in production was because the cropping calendars of most schemes were yet to begin.

The second production cycle also experienced a 22% increase in area cropped with a corresponding land intensification ratio increase of 21% from 2013 to 2014. This resulted in 65%, 10% and 38% increase in vegetable, cereal and legume production respectively. By this time the cropping calendars of most of the schemes were already in session resulting in increases in all crops produced.

2.11.2 Informal Irrigation

Informal irrigation is defined as irrigation practised by individuals who cultivate an area of up to about 0.5 hectare or more using simple structures and equipment for water storage, conveyance and distribution. Capital investments are relatively very small and are provided from the farmer's own resources. However, there are situations where some non-governmental organizations fund informal irrigation.

Information from 8 regional offices of GIDA indicated that area cropped under informal irrigation in 2014 increased by 152% compared to that in 2013. The bulk of the increment in the year came from the Volta Region which was as a result of support received by farmers from EDAIF and GCAP. This resulted in increased food production by 134%, from 2013 to 2014 (Appendix four).

Three cropping cycles were reported from four regions (Gt. Accra, Upper East, Volta and Eastern Regions) out of the eight that reported on irrigation activities. Two cropping cycles were also recorded in two regions which are Northern and Ashanti while Upper West and Brong Ahafo Regions reported on only one cropping cycle. Area cultivated in the first cycle of 2014 increased by 65% over the previous year's value. Second cycle cropping also saw cultivated areas increased by 236% from the previous year's figure. Similarly, the third cycle saw an increase in cultivated area by 375%.

The combined area cropped under both formal and informal irrigation in 2014 was 35,902 hectares, an increase of 66% over 2013 which stood at 21,677.90 hectares. Total food production for 2014 also increased by 72%. Production for 2014 disaggregated, indicated about 89,000 metric tonnes for vegetables and 96,000 metric tonnes for cereals.

The informal sector recorded a total food production of 130,189 metric tonnes. Cereal production contributed about 49% while vegetable production accounted for about 51%. The highest regional producer was Volta Region with 69% followed by Greater Accra Region 14% followed by Upper East Region 7%, Ashanti and Eastern Regions about 4% each, Northern Region about 2%, Upper West and Brong Ahafo Regions have a combined total of less than 1%.

The highest irrigated vegetable producing region was the Volta Region, accounting for about 57% of total production and Brong Ahafo recording the least of about 0.1%. While in the production of cereals, Volta Region again contributed highest with about 80% and Upper West Region recorded the least of less than 1% due to one cycle of cropping undertaken in the year.

2.11.3 Irrigated Land Use Efficiency

Efficient use of irrigated land is a measure of how judicious lands that have been developed for the purpose of irrigation are being put to use. During the reporting period, land intensification ratio decreased by 16% from last year. The decline was mainly as a result of shortage of water in the Tono Irrigation Scheme (second largest scheme) reservoir because of inadequate rainfall in the catchment area of the reservoir.

2.11.4 Water User Groups

Total operational water user groups increased in 2014 by 10% compared with 2013 due to increases in the number of water user groups in the Upper East Region. Dormant water user groups in the region were revived through mainly rehabilitations (56 dams and dug outs by GSOP, 42 by NRGP, and 12 by WFP – 12) in the region. Western Region recorded the least operational water user groups because the Inland Valley Rice Development Project was absorbed by NRGP and are being mobilized to go into crop production.

Table 2.18: Water User Groups

Region	Total operational water user groups by Annual - 2013	Operational water user groups created in Annual - 2014	Total Membership (Annual)				% Female in Annual - 2013	% Female in Annual - 2014
			2013		2014			
			Male	Female	Male	Female		
Greater Accra	96	98	1374	209	1404	239	13.20	14.55
Central	3	4	93	37	131	67	28.46	33.84
Eastern	62	58	563	217	570	265	27.82	31.74
Western	44	0	700	164	0	0	18.98	0
Volta	61	62	993	708	1003	713	41.62	41.55
Ashanti	16	16	261	167	275	119	39.02	30.20
Brong Ahafo	15	11	135	37.0	146	90	21.53	38.14
Northern	30	29	367	215	283	165	36.94	36.83
Upper West	58	58	2258	1050	2386	1130	31.74	32.14
Upper East	102	119	10,938	6,941	8382	7753	38.82	48.05
Total	487	455	17,682	9,745	14,580	10,541	35.62	41.96

Source: Regional Reports

2.12 Water Management Systems Development

Government has realised the importance of unconventional irrigation and is therefore, promoting small and micro scale irrigation because it is cheap, economical and can be widespread. Farmers were trained in improved

water management technology to improve the quality and productivity in rainy season rice through nursing and transplanting of rice seedlings and water management.

2.13 Access to Agricultural Services

The ultimate implication of policy in the agricultural sector is to deliver on agricultural services for improvement in agricultural production. These services include provision of information on input and output prices, information on specific extension practice that would culminate in productivity improvement, reduced poverty and improved standard of living. Therefore, Agricultural Service Centres have been established to resource farmers with the needed services.

2.13.1 Agricultural Information Centres

In order to promote marketing of agricultural produce the Ministry established information centres to disseminate information on agricultural commodities to the public. The main aim of the centres is to improve competitiveness of the farmer in order to increase their income level. In the year under review, marketing services provided include information on price of inputs such as agro chemicals, planting materials, produce prices and availability sources of subsidized fertilizer.

In the 2014 farming season, the number of beneficiaries that were recorded to have visited agricultural information centres increased by 185% against that of 2013 across the country. Major increases in the number of beneficiaries were recorded in Ashanti Region (284%), Northern Region (113%) and Western Region (22%). People now consider agriculture as a business and therefore, seek for information from these centres to improve their production. However, total operational centres decreased in 2014 by 6% as compared with 2013.

In addition, the Ministry has collaborated with Team Esoko in market information sharing with farmers and processors since 2011. Voice messaging has been incorporated in the services delivered to farmers and processors to make it user-friendly to illiterate farmers and processors. To further deepen the benefits of Esoko a pilot localized Esoko services for two specific Value Chains (Kanyetiwale and Asueyi) has started in earnest. Three hundred (300) actors have been trained and are now receiving Esoko sevices (commodity prices, weather information, etc). It is expected these services will be of immense benefit to the actors in the two value chains.

2.13.2 Animal Traction

Animal traction involves the use of draught animals in agricultural field operations and rural transport. Its use is prevalent in farming communities in the Northern, Upper East and Upper West Regions. Apart from its suitability to such areas due to the sandy and shallow nature of the soils, it is also relatively inexpensive.

Two animal traction centres were operational in 2014 compared to 4 in 2013. They are located in Tolon District of the Northern and Wa Municipal in the Upper West Regions. The decrease in number of operational centres is due to a shift towards the use of conventional traction equipment, injury and aged animals. Results from IFPRI study conducted in June, 2013 also cited aging labour force; scarcity of "ploughboys", as the boys who traditionally do the ploughing are now attending schools; fast-wearing ploughshares; poorly designed harnesses, yokes and implement beams; lack of raw materials and metal scraps for local fabrication of implements; limited dry season feed and water; and theft as contributing factors to reduction in the use of animal traction. To revamp the use of animal traction, all the aforementioned causes should be addressed.

CHAPTER THREE

3.0 Increase Growth in Income

Ghana's development plan emphasizes poverty reduction and wealth creation as critical for national development. FASDEP II and METASIP points out the need for enhanced growth in incomes in the agricultural sector through diversification into cash crops, livestock and value addition. The policy indicates that enhanced incomes will reinforce food security through financial access to food. This calls for the need to diversify into cash crops and livestock with a business orientation

The Ghana Living Standard Survey (GLSS 6), 2014 estimated that 52% of households in Ghana own or operate a farm. Farming is mostly rural, engaging 83 percent of rural households. The major source of household income is from non-farm self-employment, contributing 48.3%. Wages from formal employment is the second major contributor to household income (GH¢7,718.10) followed by household agriculture (GH¢3,342.23). This means that increasing incomes in the agricultural sector will result in general increases in income.

3.1 Value of Production

Specific studies are usually conducted to determine farm household income. In the absence of this, the Ministry uses the value of production as a proxy. This proxy is determined by multiplying total production by the average price of each commodity. In the reporting period, the proxy was employed and supplemented with information from the GLSS 6. The key sub sectors of focus were crops, livestock and fisheries because data on forestry was not readily available.

The general observation was that nominal prices increased over the period causing increases in values of production of fish and crops. This may be due to increase in transportation cost and depreciation of the Ghana Cedi especially at the latter part of 2014.The value of meat produced however, experienced a slight reduction which was due to reduction in the total quantity produced.

3.1.1 Value of Crop Production

The total value of selected major staples in 2014 was GH¢32,076,311.00 as against GH¢28,753,630 in 2013. This generated a percentage difference of about 12%. The value of all crops increased in 2014 due to increase in both production and price except for maize where production declined and price increased. The increase in value implies that farmers' income level improved by 12% in 2014.

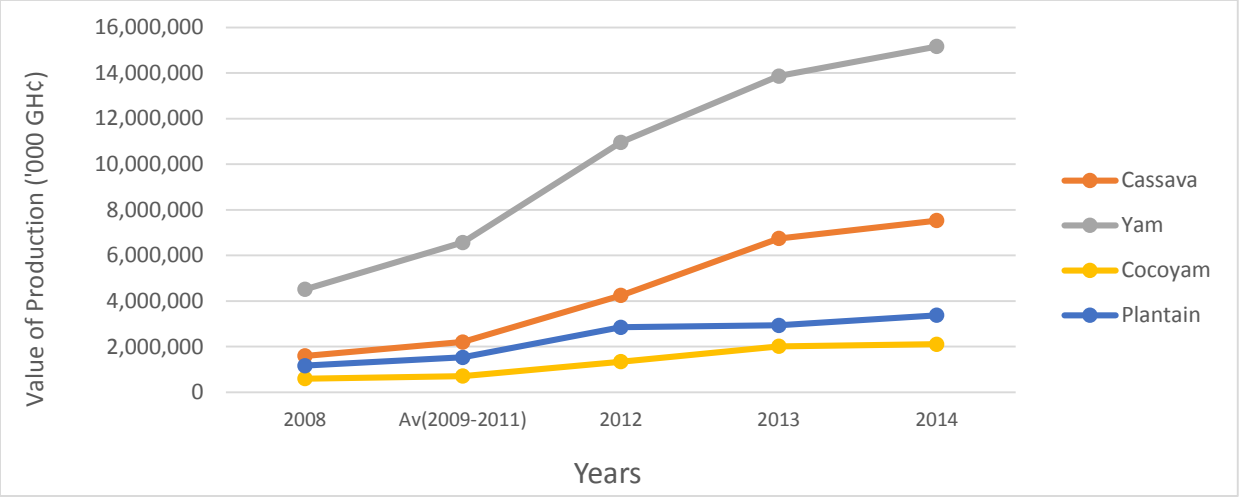


Figure 3.1: Value of Production (Plantain, Roots and Tubers)

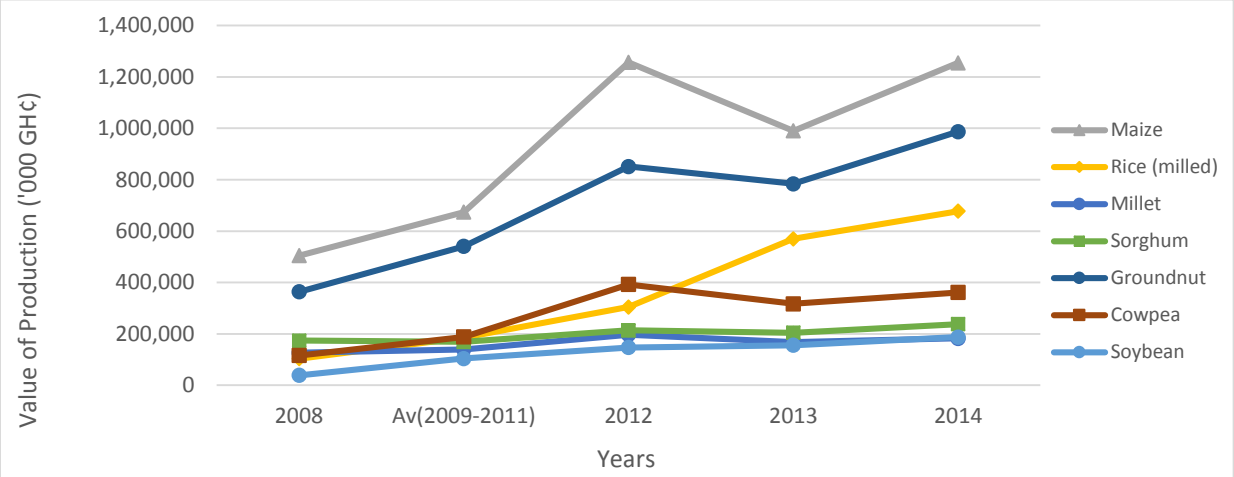


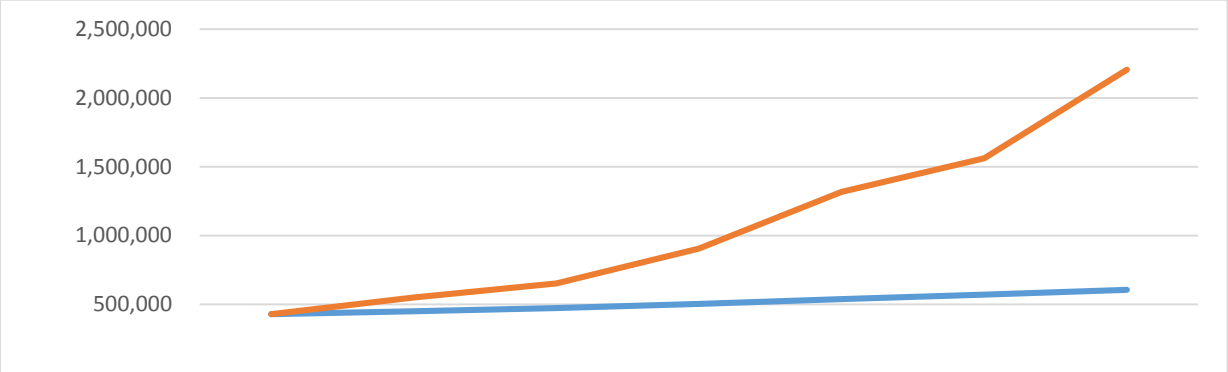
Figure 3.2: Value of Production (Cereals and Legumes)

According to the GLSS 6, 2.1 million farm households harvested maize/groundnut/peanut (534,766), beans/peas (362,333) and rice (332,504). The estimated total annual value of harvested staple grains, field crops and cash crops produced by Ghanaian farm households is estimated at GH₵4,897.9 million. The total value of sales within the same period was GH₵2,742.3 million representing 60 percent of harvested value. Maize was one of the major crops in terms of both volume and value of sales. The annual maize harvest was valued at GH₵1,712.1 million with the total sales amounting to GH₵597.8 million. Three other important crops in terms of the value of their sales are: groundnut/peanut, rice and cashew nut with annual sales of around GH₵174 million, GH₵158 million and GH₵79 million respectively.

3.1.2 Value of Meat Production

Comparative data for 2014 and 2013 reveal that there was an increase in the price of carcass for the period under review. Most livestock farmers and traders paid more for inputs and the associated increased cost of production was passed on to consumers of meat and products. The average unit price of carcass weight

increased from GH ₵12.00 per kilogram in 2013 to GH ₵16.00 per kilogram in 2014. The value of livestock reduced from GH¢1,560,642 in 2013 to GH¢1,531,344 in 2014, representing a 2% reduction in the value of meat. The increase in unit prices, apparently indicates that livestock farmers during the period earned more income compared to 2013.



	2008	2009	2010	2011	2012	2013	2014
Real	429,504	450,023	473,758	502,916	537,242	571,414	604,555
Nominal	429,504	549,921	651,456	904,968	1,317,612	1,560,642	2,205,227

Figure 3.3: Real and Nominal Values of Local Meat Production

In figure 3.3, though both the nominal and real prices are increasing, the nominal price is increasing at a higher rate. This was the result of increases in transport fares, rate of inflation and depreciation of the Ghana Cedi against the US Dollar. The income of the farmer is improved when interventions prevent or at least reduce the loss of animals. Monitoring reports indicate that mortality decreased by 80% in pigs arising from trypanosomiasis control. Control activities focused on the use of the Livestock Protective Fence (LPF) in peri-domestic pig production systems. This resulted in enormous economic benefits in terms of savings on drugs. Details in Box 3.1. The intervention was supported by the FAO and IFAD. The LPF proved to be highly effective against tsetseflies.

Box 3.1: Benefits of Livestock Protective Fence (LPF)

- *Piglet mortality was reduced by 80%.*
- *An average monthly expenditure of US$ 4.18 (GH¢14.63) on drugs for pigs was reduced to US$1.71 (GHC 5.99) and this translated to a reduction of about 60%.*
- *The average price of a 6-week old piglet increased from US$ 15 to US$ 30 (GH¢52.50 to GH¢105.00). Prior to the intervention, 6-month old weaned piglets weighed 5Kg. After the intervention, 6-week old piglets weighed 15Kg.*
- *Apparent tsetsefly density, measured by tsetseflies caught in a Trap per Day (CTD), reduced from 65CTD to 0 CTD within 60 days. An apparent total elimination of tsetse flies in the trial sites.*

The GLSS 6, indicates that in all, Ghanaian households keep about 39 million chickens, over 7 million goats, about 6 million sheep, a little over 2 million cattle, and about 4 million guinea fowls. The estimated value of these livestock is GH₵4,553 million, of which GH₵455 million (representing 10%) was sold in 2014. Purchases made in 2014 for the purpose of breeding animals amounted to GH₵184 million.

3.1.3 Value of Fish Production

Government policy to promote aquaculture attracted high investment into the sub-sector creating about 3,000 more jobs in 2014. This is reflected in the increase in value of domestic fish produced from GH¢763,108,766 in 2008 to GH¢3,347,868,556 in 2014 (Table 3.1) representing an increase of 339%. This was due to increased government expenditure on aquaculture development. The value of marine capture on the other hand, declined due to a decrease in fish stock.

Table 3.1 Value of Domestic Fish Produced - 2008 to 2014

Year	Marine	Inland	Aquaculture	Total
	(GH¢)	(GH¢)	(GH¢)	(GH¢)
2008	763,108,766	n/a	n/a	763,108,766
3yr-Av. (2009-2011)	1,394,633,735	n/a	n/a	1,394,633,735
2012	2,233,660,439	712,000,675	184,189,500	3,129,850,614
2013	1,883,994,498	576,660,000	230,965,248	2,691,619,746
2014	1,753,427,556	585,098,000	1,009,343,000	3,347,868,556

Source: MoFAD *N/A =Not Available*

3.2 Promotion of Cash Crop, Livestock and Fish for Income

During the period, programmes and projects implemented by MoFA and MoFAD made efforts to address challenges in the sub-sectors. These were mainly through the cultivation of more hectares, attracting more farmers to the various sub-sectors and ultimately making the sub-sectors more attractive for businesses. The following sections summarizes interventions made.

3.2.1 Cash Crop

Activities of selected cash crops are highlighted. These include mainly coconut and cashew. The activities covered production of seedlings and hectares planted.

3.2.1.1 Coconut Production (RESTOLIFE PROJECT)

The Restoration of Livelihood of Coconut Farmers (RESTOLIFE) Project was aimed at reducing poverty by helping farmers replant coconut plantations destroyed by the Cape Saint Paul Wilt Disease. Farmers were supported to re-plant an additional 70 hectares of coconut seedlings in 2014 against existing 212 hectares in 2013 through the engagement of additional (15) additional coconut farmers.

3.2.1.2 Cashew Production

To address the challenge of low incomes in cashew production, and attract more farmers to the business, 240,000 grafted cashew clones/seedlings were produced at the Wenchi Agricultural Station and Cocoa Research Institute of Ghana, Bole station. These were distributed to 1,000 farmers through the ACi-MoFA Matching

Fund Project for the establishment of 2,000 ha. This is expected to generate an estimated income of GH¢400,000 at maturity.

3.2.2 Poultry and Livestock Production

One of the key outputs of METASIP is production of poultry (including guinea fowl) is increased by 20% by 2015 through adoption of improved technologies. This was also because guinea fowl has a great potential of improving the incomes of the small scale farmer especially in the three northern regions of Ghana. Activities carried out and the outcomes are documented in the next few paragraphs.

3.2.2.1 Promotion of Guinea

Farmers who adopted fully the improved technologies demonstrated to them, have started reaping the benefits. Reports from the field indicate that guinea fowl incubators supplied to farmers by MoFA, increased the number of eggs hatched. This translated into an increase in average income of GH ₵4,000.00 per annum for some farmers (*details in Box 3.2*).

Box 3.2: Benefit of WAAPP 2 Guinea Fowl Project

A beneficiary farmer of WAAPP 2 Guinea fowl project at Garu-Tempane District hatched an average of 300 eggs per annum using natural means (artificial incubation) but can now hatch an average of 9,000 eggs with the aid of an incubator supplied by the project. He now hatches eggs for 400 farmers in a year and thus reported an extra income of up to GH₵4,200.00 per annum. With this income the farmer was able to expand his stock, paid his sister's school fees at the polytechnic and purchased and registered a parcel of land.

3.2.2.2 Cockerel Project

The objective of the cockerel project is to enhance food security, increase intake of animal protein, increase earning capacity of rural dwellers particularly women and to ensure knowledge and skill of smallholder poultry farmers. The Ministry raised 16,000 birds (cockerels and pullets) to 8 weeks of age and sold 14,120 of them to 1,280 local poultry keepers in 48 districts of 6 regions at a subsidized rate of 30% at GHC 6.00 for layers and GHC5.00 for pullets.

A beneficiary account shows that the project is economically very viable and highly beneficial. Mr. Alex Ampoma, a resident of Krutakyi in the Kintampo South District, Brong Ahafo Region who used to purchase cockerels from hawkers in Kumasi, usually lost most of his birds before maturity. He bought 120 cockerels under the cockerel project, out of which he lost only two and upgraded by adding 200 layers. Through sale of matured cocks he was able to pay his children's school fees, pay the cost of weeding his cashew farm, consume and/or give a total 49 cocks as gifts to relatives and friends.

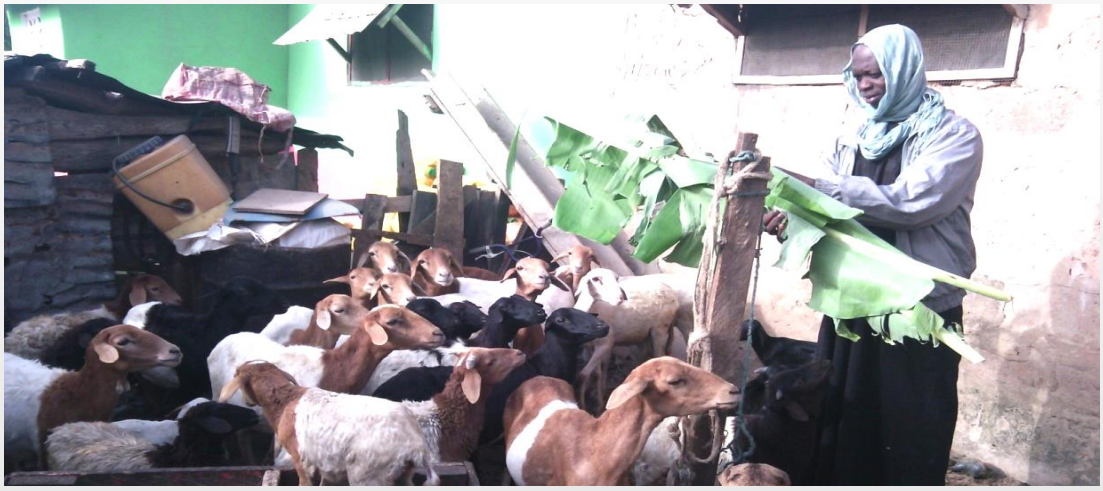
Reverend Augustine Bae, a resident of Atebubu, Brong-Ahafo Region also purchased 180 of the cockerels delivered to the district and successfully raised them to maturity. Even though he could not quantify the monetary gains, he was aware of the success he chalked as a result of raising these cocks. These include paying his wife's medical bills, paying part of his sons' school fees, providing enough meat for the family, giving his relatives and friends some cocks for festivities.

3.2.2.3 Credit-In-Kind Small Ruminants Project

Under the Livestock Development Project (LDP) in 2010, forty-five thousand (45,000) small ruminants were distributed to 4,500 farmers in 7 regions. There was no monetary commitments on the part of the recipients for the sheep and goats. They were required to return in two years, the same number of animals received. Thereafter, a total of 2,580 animals were passed on to 258 farmers in the project regions in 2014. According to the beneficiaries, the project has been timely and very helpful. Box 3.3 has the details of a beneficiary account.

Box 3.3: Credit-In-Kind Small Ruminants Project

Seidu Kassim, a beneficiary of the Credit in-kind sheep programme in Kintampo is a backyard sheep farmer with a stock size of 12. He received 10 gimmers and passed on 10 gimmers to other farmers. He sold 8 and currently has a stock size of 32. Proceeds were used to settle his child's school fees, supported his maize farm and constructed two additional living rooms for his family.



3.2.2.4 Credit-In-Kind Pig Project

In 2011, the LDP supported 250 farmers in 4 regions (Gt. Accra, Volta, Central and Western) with 1,000 pigs. The beneficiary farmers raised the pigs for a year and returned the same number of stock to be passed on to other interested farmers. A total of 1,820 animals were paid back and re-distributed to 455 interested farmers in 2014.

Central Region received a total of 186 gilts and 14 young boars which were distributed to 62 small-scale farmers in 8 districts. The number of animals recovered from the first phase were given to 71 farmers in 12 districts in the second phase. With respect to the third phase, 58 pigs (weaners) were recovered from the second phase and given to 21 farmers in 7 districts.

Before the project, the only source of income for Kweku Twum, a civil servant from Agona Asafo in the Agona East District was his monthly salary. This was not enough to cater for himself and his dependents. He took delivery of 4 sows in 2011 and now has a stock of 48 apart from what he has already sold.

3.3 Reduced Post-Harvest Losses

Post-harvest loss is a major source of reduction in farmers' income. The major causes of post-harvest losses in the agricultural sector include limited knowledge of post-harvest handling, inefficient harvesting methods, and inappropriate storage systems on the part of smallholder farmers. Other causes include limited access to information on pest control methods and inappropriate transportation methods and logistics. Activities were implemented to address these challenges to minimize the effect of the post-harvest losses on the farm families. This section dwelt on these activities.

3.3.1 Post-harvest losses along the value chains of crops

Strategies are in place to reduce the impact along the value chain and hence improve the farmers' income. To actualize these strategies, MoFA organized training for selected households to enhance small and medium scale mechanical processing of some priority commodities (cassava and pepper). In a related development, MoFA promoted the use of super grain bags across the country to reduce damage to cereals by storage pests such as weevils and lager grain borers.

3.3.2 Reduction of Post-Harvest Losses in Fisheries

MoFAD completed the construction and furnishing of 6 cold stores in 2014. However, only the cold store located in Prampram is partially operational due to unavailability of a dedicated electrical transformer. The cold stores which are located in different districts require a transformer each and negotiations are underway with the respective district assemblies for provision of the electrical transformers and subsequent management of the cold stores.

Figure 3.4: Prampram Cold Store

The cold store at Prampram was tried and 30kg of ice was produced. At full capacity, it can produce 5 metric tonnes of ice per day. The income of fish mongers is expected to increase as a result of selling fresh fish in good state resulting from improved cold storage.

To reduce post-harvest losses in the fish industry, hook and line fishermen were introduced to the use of insulated ice boxes (made from marine plywood sandwiched by styrofoam and coated all over with fiber glass material) while on shore. Two of such boxes were provided to fishermen on trial basis to ultimately help them land fish in good condition and attract better prices. The insulated ice boxes prolong the time taken by ice to melt and thus increasing the shelf life of fresh fish. This is expected to replace the old rusted and unhygienic freezers and wooden boxes which are currently being used.

3.4 Development of New Products

Developing a product that meets consumer wants and needs is the essence of successful business development. In today's complex and fast-changing world, creating a product with the desired attributes and the modifications needed to meet changing consumer demand is critical. The agricultural sector is no exception.

3.4.1 Production of beer from Cassava

Guinness Ghana Limited (GGL) and Accra Brewery Limited (ABL) continued to patronize local raw materials for their respective breweries. Introduction of beer made from cassava and rice to the Ghanaian market a couple of years ago, is providing ready market for these crops especially cassava. This is partly responsible for the general increase in the area put to cassava production. To date a total of 12, 904 metric tonnes of cassava have been purchased, with GGL buying over 84 percent and ABL buying the rest. In addition to the cassava, ABL bought other raw materials including maize grits, whole maize and red sorghum. The maize grits bought amounted to 3,000 metric tonnes valued at GH¢ 4.3 million. See details in Tables 3.2 and 3.3.

Table 3.2: Quantity of cassava purchased by Guinness Ghana Limited (2013 and 2014)

Commodity	Year	Quantity (Mt)	Value (GH¢)
Cassava	2013	3,527.00	n/a
	2014	7,368.32	1,105,248.00
	Total	***10,895.32***	***1,105,248.00***

Source: Guinness Ghana Limited

Table 3.3: Quantity of cassava purchased by Accra Breweries Limited (2013 and 2014)

Year	Commodity	Quantity (Mt)	Value (GH¢)
2013	Cassava	1,214.00	n/a
2014	Cassava	794.60	488,431.77
	Red Sorghum	161.10	233,196.40
	Maize Grits	2,994.50	4,299,936.10
	Whole Maize	270.35	279,348.96
	Total	***5,434.55***	***5,300,913.23***

Source: Accra Brewery Limited

3.5 Development of Pilot Value Chains

Evaluating the performance of entire segments of the chain and determining the weaknesses and strengths in the chain allows for cost effectiveness. Value-chain analysis looks at every step a business goes through, from raw materials to the eventual end-user. The goal is to deliver maximum value for the least possible total cost. Strategies are in place to facilitate the development of pilot value chain in the sector.

3.6 Intensification of Farmer-Based Organizations (FBOs) and Out-grower Concept

FBOs provide smallholder farmers with bargaining power in the market place, enable cost-effective delivery of extension services and empower members to influence policies that affect their livelihoods. In this regard, MoFA and other stakeholders in the sector are promoting the development of FBOs and out-grower schemes as a means of providing services to them.

3.6.1 Farmer Based Organisation (FBO) Development

As part of efforts to develop FBOs and make them sustainable, the Australian African Partnership Facility (AAPF) built the capacity of 10 regional extension officers, 739 AEAs, 30 members of FBO apex organizations and 191 MoFA staff, towards facilitating FBO formation and service provision. In 2014, out of 6,679 functional FBOs, 4,430 (Table 3.4) were serviced by MoFA through technical training and facilitated to access credit and other technical assistance.

With the help of the Australian Volunteer for International Development (AVID) Programme in 2013, an FBO website was developed and fine-tuned. The website was updated and launched in the September 2014. Software for collecting data was installed in all districts in the 10 regions for collation of information on active FBOs in the country.

Through the website, linkage and collaboration among stakeholders has improved. Economic activities of some business entities were carried out at minimal transaction cost due to the reduction of the drudgery associated with long distance travels.

Table 3.4: Distribution of Farmer Based Organisations Accessing Services

Year	Number of formed FBOs	Existing FBOs (Cumulative)	Number of functioning FBOs	Number of functioning FBOs accessing financial services	Number of functioning FBOs accessing marketing information	Number of water user associations
2010	N/A	7,828	6,434	2,587	2,341	520
2011	1,182	9,010	7,116	2,676	1,818	546
2012	3,262	12,272	6,755	2,518	1,548	466
2013	3,238	15,510	5,780	1,641	1,838	454
2014	4,372	19,882	6,679	1,402	2,323	1,468

Source: RAD Reports

3.7.2 Out-Grower Scheme Development

The agricultural sector recognizes the development of out-grower schemes as an approach to organizing and developing small-holder farmers. This has been incorporated in project implementation. Some of these projects include GCAP, OVCF, NRGP and GHABROP. The projects facilitate the provision of financial support (loans or grants) to groups so long as they are organized and have established formal relationships with nucleus farms. Furthermore, GCAP supported the development of a national framework to guide the evolution and development of Out-grower schemes.

3.7.2.1 Crop Out-grower Scheme

There are hundreds of out-grower schemes dotted around the country. The ministry facilitated activities of some out-growers through technical support. GCAP is a private sector oriented and demand driven project financed by a loan of US$100 million from the World Bank and a grant of USD 45 million from the United States Agency for International Development (USAID).

In 2014, GCAP supported the development of nucleus out-grower schemes with matching grants. The matching grant scheme offered direct support to investors and smallholder participants willing to establish new (or improve existing) inclusive business arrangements. Two calls of proposals were planned but only one was implemented in 2014 with the extended budget of USD 10 million. Grants were awarded to 31 agribusinesses with an approved amount of USD 9.576 million to cover over 6,000 small-holder farmers. At the end of the period, USD 4.190 million was disbursed.

Under OVCF, a total of 168 ha of oil palm was planted by 78 registered out-growers as at 31st December, 2014. The outlook for 2015 is that additional 100 ha of oil palm will be planted, bringing the cumulative area planted to 268 hectares, indicating 89 % of the original target of 300 hectares.

The fund in 2014 also supported 136 farmer groups in their value chains. OVCF since 2013, supported Prairie Volta Limited (PVL) with loan amounting to €3,176,710 to procure rice processing machine and accessories. With respect to rubber production, a total area of 431.25 hectares was planted out of the target of 825 hectares, involving 194 new out-growers; and 94 out-growers embarked on farm extension. This, in effect, increased the total area established under the Eastern Region Rubber Out-grower Plantations Project (ERROPP) to 988.30 hectares with an out-grower population of 585 farmers spread across the four zones of the project area (Table 3.5).

Table 3.5: Number of out-growers and area planted

2009-2012		2013		2014	
No. of Farmers	**Area (Ha)**	**No. of Farmers**	**Area (Ha)**	**No. of Farmers**	**Area (Ha)**
122	244.21	269	312.84	194	431.25

Source: OVCF

3.7.2.2 Livestock Out-grower Scheme

To support pig farmers with good breeding stock across the country, 100 farmers were selected in the 10 regions of Ghana to operate an out-grower scheme. These serve as centres for the production of breeding stock for supply to other pig farmers. So far, 18 farmers have received 72 parent stock and 112 pigs were re-distributed to 28 other farmers.

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

Ghana Broiler Revitalization Project (GHABROP) is a private sector led initiative with the concept of hub farmers and with technical support from the Ministry. It was launched in July 2014 with the pilot phase being implemented in the Ashanti and Brong-Ahafo Regions. The project produced 300,000 broiler birds which were processed at Darko Farms Limited and Yamoah Asamoah Processing Plant between October and December, all in Kumasi.

3.7.2.3 Fisheries Aquaculture Nucleus-Out-grower and Input Support Scheme

The Ministry of Fisheries and Aquaculture Development (MoFAD) has initiated a programme dubbed "Nucleus-Out-grower and Input Support Scheme". The scheme is to increase domestic aquaculture production from 38,547 metric tonnes (2014) to 120,000 metric tonnes (2017). This scheme is expected to create additional

direct jobs for about 900 unemployed persons (especially graduates) annually and over 500 indirect jobs for women fish processors and traders.

3.8 Development of Rural Infrastructure

Development of rural infrastructure such as roads are important for agricultural development. Roads open up rural communities for the evacuation of food produce thus reducing post-harvest losses, opening marketing channels and increasing farmers' income. The Government of Ghana uses a number of mechanisms to support development of feeder roads. These include direct government funding and donor funding. Improvement in farm roads is expected to lead to the reduction in transportation fares and hence cost of agricultural commodities. The Ministry collaborates with the Department of Feeder Roads (DFR) to construct these roads. Table 3.6 provides a summary of feeder roads at different levels of improvement. Under the auspices of the Department of Feeder Roads, a total of 1,291 km of roads were completed by way of bituminous surfacing, rehabilitation and spot improvement.

Table 3.6: Trend of feeder road development

Activity	2011	2012	2013	2014
Spot improvement (km)	469	1,285	530	860.04
Rehabilitation (km)	623	1,325	1,395	236.44
Bituminous surfacing (km)	-	-	-	195.95
Steel bridges (No)	17	16	21	-

Source: Department of Feeder Roads

Table 3.7: Regional distribution of feeder road development

Region	Activity			
	Bituminous Surfacing	Rehabilitation	Spot Improvement	Total
Ashanti Region	6	65.94	65.3	137.24
Brong-Ahafo	8.1	61.85	181.55	251.5
Central	26.91	25.85	70.4	123.16
Eastern	34.44	18.6	58.79	111.83
Greater Accra	5.65	4.2	21	30.85
Northern	10	37.5	247	294.5
Upper East	9		121.9	130.9
Upper West	10		50.5	60.5
Volta	50.9	22.5	9.8	83.2
Western	33.95		33.8	67.75
Total	***194.95***	***236.44***	***860.04***	***1291.43***

Source: Department of Feeder roads

The ministry through NRGP is addressing the deficit road infrastructure in the northern parts of Ghana. It aims at addressing constraints to poverty reduction by improving production and marketing infrastructure (rural roads and storage facilities) to support agricultural value chain activities. Thus feeder roads are being constructed to link crop production sites to markets or communities. The road construction is in phases. Phase 1 is to construct 154 km of feeder roads and Phase II, 492 more kilometres. The state of the two phases is depicted in Table 3.8.

Table 3.8: Table 3.8: Physical and Financial Progress of Feeder Roads Contracts

No	Region	Lots	Length (km)	Contract Amounts (GH¢)	Amount Certified as at June 2014 (GH¢)	Financial Progress (%)	Physical Progress (%)
1	Northern	20	203.3	10,911,612.36	9,971,463.45	91.38	98.9
2	Upper West	12	107.05	7,909,058.80	5,316,903.47	70.56	82.2
3	Upper East	11	103.7	7,159,927.17	5,581,727.15	78	96
4	Brong Ahafo	10	77.95	4,780,135.82	3,367,230.29	71.33	89.2
Total		**53**	**492**	**30,760,734.15**	**24,501,242.16**	**79.65**	**91.93**

Source: NRGP

The 69 lots of feeder roads are located in 345 communities in 41 districts within the NRGP area. These roads are serving over 248,000 direct community members and benefitting over 500,000 indirect beneficiaries including other communities, input dealers, marketers and other projects. As a result of the construction of these roads, farmers gained access to improved inputs and market. This contributed to productivity increase from as low as 0.8mt/ha to 3.5mt/ha for maize in some areas. Many farmers also expanded their fields from 0.4 ha to over 2 ha in many of these areas.

CHAPTER FOUR

4.0 Increased Competitiveness and Enhanced Integration into Domestic and International Markets

Ghana's economy has been developing with an average GDP growth rate of 8.5% in the last five years with an increasing middle income population. As individual and household incomes increase, a corresponding increase in standard of living of citizens is expected. This will result in increased demand for good quality food products.

The agricultural sector is positioned to take advantage of the situation and improve its competitiveness on the domestic and international market. As a result, the Ministry in collaboration with its partners is promoting the value chain approach to enhance the quality of food products through partnership and trust building among different actors along the value chain. The interventions focus on facilitating transformation in the capacities of smallholder producers and processors (including women), into medium and large scale commercial businesses and integrate them into both local and international markets.

4.1 Marketing of Ghanaian Produce in the Domestic and International Markets

According to a survey by the Export Marketing and Quality Awareness Project (EMQAP) in 2012, the domestic market accounted for over 95% and 35% of total vegetable and fruit production in Ghana. In the last four years, the demand for major fruits (mango, pineapple, banana and pawpaw) and vegetables (chilli) has increased by over 50%. Most of the production of fruits is undertaken by medium to large scale producers operating in the Free Zone enclave where they export between 60-70% of their output. Between 30-40% is thus available for the domestic market. However, as their output increases, so does the volume available for domestic markets (including trade and agro-processing). On the other hand, over 90% of vegetables (tomatoes, onions.) are produced by smallholder farmers and are consumed locally.

4.1.1 Marketing of Ghanaian Produce in the International Market

Ghana has strategized to take advantage of the growing export market with its competitive advantage in horticultural crops such as pineapple, mango, pawpaw, garden eggs, and chilli. These crops are mainly produced by smallholder horticultural crop producers who lack the capacity to produce and meet the growing demand. Challenges of these smallholder farmers include limited access to arable land and credit (investment and working capital), high interest rates on credit, availability of improved planting materials and high cost of certification standards, among others.

MoFA in collaboration with MOAP of GiZ and other stakeholders introduced the GlobalGAP certification support scheme for pineapple and mango farmers in major production regions. MOAP in collaboration with AfriCert has also established a national certification body (SMARTCert), to reduce the high cost involved in GlobalGAP certification. In collaboration with CERES (International Certification Body), 12 GlobalGAP external auditors were trained to become staff of SMART-CERT (Ghana's first registered Certification Body) and 15 UTZ certification auditors have also been trained and certified to support SMART-CERT. As a result 912 farmers have since 2008 received GlobalGAP certificate.

In addition, MOAP is supporting efforts to establish a food quality standard for horticultural crops in Ghana by introducing the Green Label Scheme. The initiative aims to support the establishment of a local label that

farmers who adhere to Good Agriculture Practices (GAPs) will sell their produce at selected sales points which guarantees the quality and safety of their produce. The project will seek to develop a sustainable fruit and vegetable value chain by enhancing the capacities of all actors to adhere to strict quality control procedures through the formation of groups and associations. These identified groups will be offered training in the area of good agricultural production practices using available improved technologies for employment and income generation.

In addition, training will be offered in improved marketing innovation technology, emphasizing on good hygienic practices, safety practices, packaging and labelling and storage and distribution. The capacity of traders will be built in good practices in the distribution of fruits and vegetables from producing areas to marketing canters. The capacity of processors will be built in the use of appropriate packaging equipment and materials, branding and adoption of standard weight and measures to enhance competitiveness in marketing. The certificate will be launched formally in the second quarter of 2015 and piloted over the next two years.

To increase market access, plans were initiated to enable the overall national best farmers for 2011, 2012 and 2013 to participate in an international trade fair event "Fruit Logistica" slated for the first quarter of 2015 in Berlin, Germany.

4.1.1.1 Export of Non-Traditional Agricultural Commodities

Export of all non-traditional products for the year 2014 amounted to US $2,451,477,890 (GHC7, 093,940,809) compared to US $2,439,000,000 (GHC4, 746,545,805) in 2013. Export of non-traditional agricultural products contributed 13.22 % of the total earnings from the export of all non-traditional commodities in 2013 and 13.57% in 2014, with a marginal increase of 0.35 percentage points.

Generally, there was a reduction in the quantities of most non-traditional agricultural commodities exported in 2014 over 2013. There was a corresponding decrease in the value of commodities exported where quantity decreased except for oil seeds and nuts. In this case, while quantity exported reduced by 23.61%, value increased by 36.9% as illustrated in table 4.1. The increase in the value of commodities resulted from the volatile exchange rate ($1:GH2.018 in 2013 and $1: GH¢3.25 in 2014).

Table 4.1: Export of Non-Traditional Agricultural Commodities (Volumes and Values 2013 - 2014)

Commodity	2013		2014		Percentage Change	
	Quantity (Mt.)	**Value (GH¢)**	**Quantity (Mt.)***	**Value***	**% Change Quantity**	**% Change Value**
Oil seeds and nuts	443,089.91	437,143,806	338,465.04	598,667,668.00	(23.61)	36.95
Horticulture products	109,652.07	111,434,224	192,933.57	192,465,156.00	75.95	72.72
Game and wide life	80.27	820,371	52.48	316,515.00	(34.62)	(61.42)
Fish and sea foods	13836.832	65,654,095	33,267.17	166,223,389.00	140.42	153.18
Coffee/ Tea/ Spices	5,559.11	10,748,532	1,411.92	4,099,760.00	(74.60)	(61.86)
Cereals	5049.82	1,508,208	869.38	930,993.00	(82.78)	(38.27)

*Source: Ghana Export Promotion Council, 2014 *provisional*

Table 4.2: Export of Non-traditional Agricultural Commodities (Mt)

Commodity	2008	Av(2009-2011)	2012	2013	2014*	% Change 2013/2014
Pineapple	35,134.00	38,921.67	41,212.00	40,095.00	33,633.56	(16.12)
Mango	858.00	531.67	1,222.00	1,789.00	1,275.62	(28.70)
Yam	20,842.00	12,361.00	28,200.00	28,200.00	35,802.29	26.96
Banana	69,773.00	58,525.33	60,425.00	8,656.00	56,073.53	547.80
Pawpaw	968.00	875.00	426.00	1,118.00	1,295.01	15.83
Fish & Sea food	40,241.00	23,295.33	30,692.00	13,836.00	33,267.17	140.44

*Source: Export Promotion Council Annual Report, 2014 *provisional*

As shown in Table 4.2, commodities such as yam, pawpaw, banana, and sea foods increased in export volumes by 26.96%, 15.83%, 547.80%, and 140.44% respectively. Pineapple and mango however, recorded reductions in export volumes by 16.12% and 28.70% respectively.

4.1.2 Marketing of Ghanaian Produce on Domestic Markets

The domestic market for some years has been expanding with mostly foreign goods and services dominating. However, current trends have shown that locally produced goods compete favourably with the foreign ones. Farms such as GADCO, Afife/Weta, ICOUR, PVL, Brazil Agro Business Ltd produce rice on large scale under irrigation for the Ghanaian market. Products from these rice producing companies compete favourably with any rice imported into the country.

With the development of new products such as cassava beer, High Quality Cassava Flour (HQCF) and Potagort, demand for cassava has increased for both domestic and industrial purposes. This is due to the development of the cassava value chains over the years. Caltech farms Ltd and DADTCO in Volta Region, Ayensu Starch Factory in the Central Region are among the major markets for cassava in the country.

4.1.2.1 Domestic Meat Production

Demand for livestock products including poultry is increasing in the country. Factors accounting for this include population growth, increased urbanization, rising incomes and improved attitude toward the intake of protein. Livestock production is thus increasing in response to this growing demand (Table 4.3 and Figure 4.1)

Table 4.3: Domestic Meat Production (Mt)

	2008	2009	2010	2011	2012	2013	2014*
Beef	19,553	19,773	19,993	20,592	21,221	21,863	22,781
Mutton	15,881	16,389	16,916	17,491	18,087	18,703	19,507
Chevron	17,444	18,315	19,226	20,341	21,198	22,429	23,573
Pork	17,002	17,506	18,010	19,072	20,224	21,432	22,932
Chicken	31,056	33,790	37,247	41,008	46,308	50,985	54,809
Total	**100,935**	**105,772**	**111,390**	**118,504**	**127,038**	**135,412**	**143,603**

Source: Computations from SRID Data **Provisional*

Meat and meat products available for consumption (aggregate of various sources of meat produced) increased by 6.59% between 2012 and 2013. However, in 2014 an average increase of 6.0% was recorded as indicated in Table 4.3. Although this shows an appreciable increase in domestic meat production, the rate of increase is

decreasing marginally (6.59% in 2013 and 6.0% in 2014). This increase has ultimately led to a reduction in meat imports (Figure 4.1). In 2013 import of meat and meat products reduced by 9.68% whereas in 2014 an impressive reduction of 39.7% was achieved over the previous year. The decrease in meat imported is reflected in the drastic reduction in meat available for consumption by up to 39.6%.

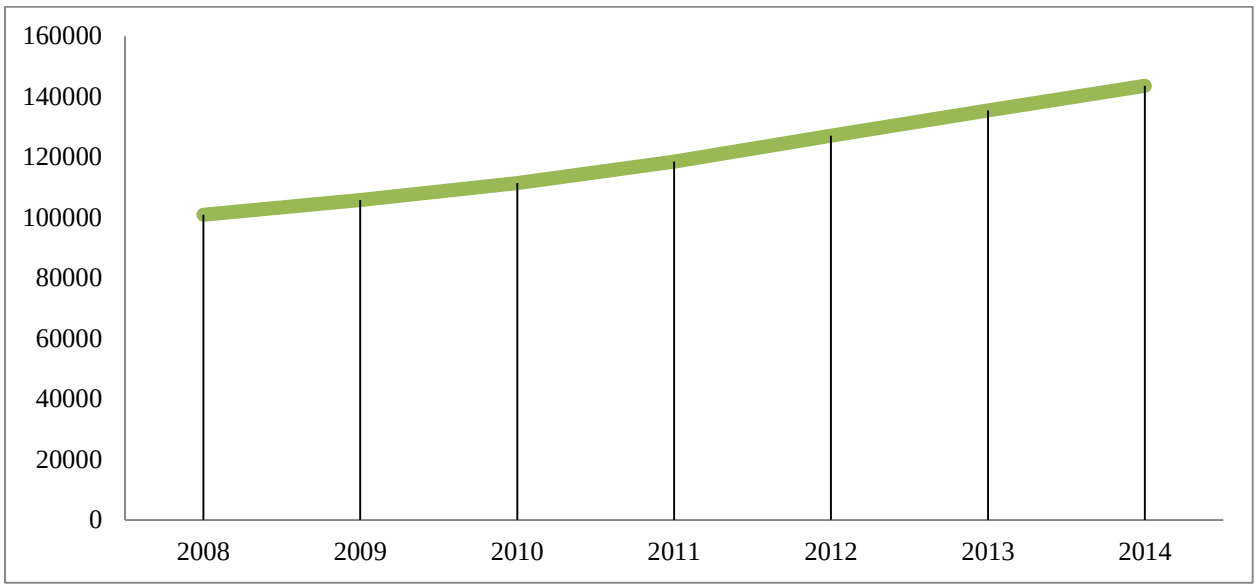


Figure 4.1: Trend in domestic meat supply

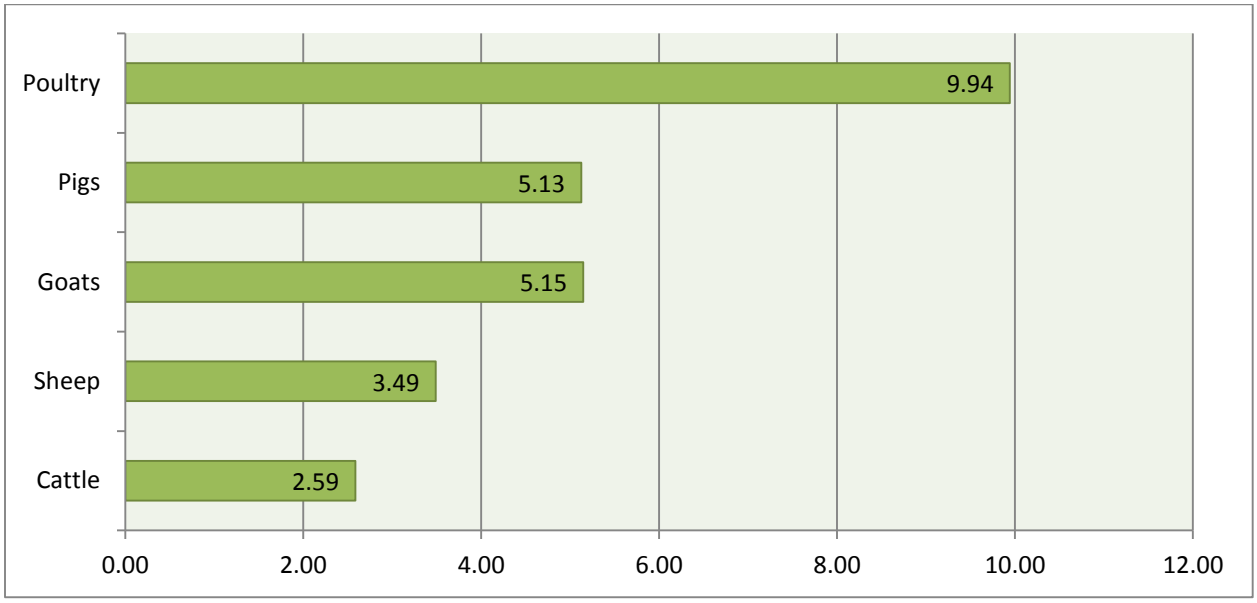


Figure 4.2: Average Annual Growth Rate (AAGR) of domestic meat supply (2008-2014)

Animals slaughtered for meat are indicated in Table 4.3. The number of slaughtered animals for meat recorded at formal slaughter houses has been fluctuating over time. In 2013, the number of livestock slaughtered reduced by 14% over 2012. In 2014, the total animals slaughtered compared to 2013 reduced by 7%. The reduction in the number of animals slaughtered was due partly to (i) reduction in the quantity of live animals imported

resulting from high cost of importation (ii) high cost of transporting animals (iii) inadequate and irregular funding for public health activities (iv) dwindling staff for public health activities and (v) proliferation of illegal slaughter points.

Table 4.4: Total Number of Livestock Slaughtered (Formal)

Type	2008	Av(2009-2011)	2012	2013	2014
Cattle	180,035	205,747	220,446	200,819	164,554
Sheep	60,468	107,187	90,656	68,344	64,594
Goats	104,266	131,633	140,914	118,623	129,073
Pigs	13,012	73,310	23,608	24,062	21,735
Others	2,850	62,924	5,521	2,824	4,175
Total Slaughter	**360,631**	**338,605**	**481,145**	**414,672**	**384,131**

Source: VSD, 2014 Annual Report.

4. 2 Standardization of Agriculture Produce

Efforts are being made at different fronts to increase competiveness of Ghanaian products on the international and domestic markets. Various standards, acts and laws are thus being developed to support the promotion of high quality domestic products. Table 4.5 presents a list of standards that have been revised to conform to current market demands and technological changes. These standards are currently under public review and will be published by the end of the first quarter, 2015.

Table 4.5: Grading and Standardization Systems

No.	Standards Number	Title	Status at 2014
1	GS 101: 2004	Specification for Pineapples	Revised/Not implemented
2	GS 533: 2004	Specification for Sweet Potato	Revised/Not implemented
3	GS 545: 2004	Specification for Papaya	Revised/Not implemented
4	GS 560:2004	Specification for Sweet Cassava	Revised/Not implemented
5	GS 588: 2004	Specification for Ginger	Revised/Not implemented
6	GS 604: 2004	Specification for Fresh Hot Peppers	Revised/Not implemented
7	GS 90: 2003	Specification for Fresh, Chilled and Frozen Beef	Revised/Not implemented
8	GS 91: 2003	Specification for Dressed, Chilled and Frozen Poultry	Revised/Not implemented
9	GS 92: 2005	Specification for Fresh, Chilled and Frozen Mutton	Revised/Not implemented

Source: GSA Annual Report, 2014

4.2.1 Grading and Standardization Systems made Functional

In 2014, the Ghana Standards Authority (GSA) in collaboration with MoFA and CSIR, developed video scripts and documentaries on grades and standards for the following key commodities: yam, cassava, rice, tomato, maize and cowpea. The production of the video scripts and documentaries is to educate the public and create awareness on Ghana standards for these key agricultural commodities and ensure their enforcement.

4.2.2 Development of Grading and Standardization Systems

A key output of METASIP is grading and standardization systems of agricultural commodities (crops, livestock and fish) made functional and effective. To this end, grading and standardization systems were developed for selected commodities that do not have grades and standards.

4.2.2.1 National Maize Standard

A pictorial version of the National Maize Standard is currently being developed to help disseminate the quality and grading requirements to all farmers and stakeholders. Inspection and grading manuals will also be developed to guide inspectors and graders of maize grains.

4.2.2.2 Promotional activities with Ghana Rice Inter-professional Body

GSA in collaboration with GRIB a national umbrella organization of rice stakeholders, has been working to promote and implement the national rice standard and the national Good Agricultural Practices (GAPs) for the rice sector. A road map for the implementation has been developed.

4.2.2.3 The Ghana Green Label Scheme

MoFA, through the Market Oriented Agriculture Programme (MOAP), collaborated with the GSA and other key stakeholders to develop the Ghana Green Label Scheme. The scheme is a concept aimed at promoting safe and internationally acceptable quality of agricultural produce on the domestic market. It also considers the environmental safety measures implemented in the production of specific commodities produced for the local market and serves as an entry point for local farmers to access premium domestic markets (Shoprite, Koala Shopping Arcade and other malls). It is expected to influence the general quality of fruits and vegetables sold in all local markets. In this regard GSA has developed the following standards;

- ✓ GS 1054 Ghana Green Label Scheme – Requirements for Fresh Fruits and Vegetables Conforming to Green Label
- ✓ GS 1074 Ghana Green Label Scheme – Interpretation Guidelines

4.2.2.4 Amendment of Fisheries Act and Implementation of the Public Act 851 (2012)

A bill was drafted in 2014 with the view of amending the Fisheries Act 2002, Act 625 to respond to international concerns about the widespread Illegal, Unreported and Unregulated (IUU) fishing practices. The Bill provides for the implementation of the international fisheries conservation obligations of the country and provides for the imposition of dissuasive sanctions on persons who engage in IUU fishing. This would ensure sustainable management of marine fisheries resources.

Sub-section 7 of the Public Act 851 was inducted in August, 2012 mandating the Ministry to carry out meat inspection in accordance with Codex Alimentaris. During the period under review, the Ministry implemented meat inspection programmes to ensure that only healthy, physiologically normal animals were slaughtered for human consumption and abnormal ones condemned accordingly. This was to ensure that meat from slaughtered animals were disease free and wholesome for human consumption.

4.2.2.5 Development of Animal Health and Production legislation in Ghana

With technical assistance from the Food and Agricultural Organization of the United Nations in 2014, MoFA reviewed its outdated Disease of Animal Act 81(1961) and other relevant legislation. This led to the development of a draft Veterinary and Livestock Improvement Bill waiting to be passed into law.

CHAPTER FIVE

5.0 Sustainable Management of Land and Environment

The aim of this policy objective is to mainstream and support the up-scaling of sustainable land management (SLM) practices in agriculture, to promote environmental resilience and productivity. It also serves as an entry point in addressing the interactions between agriculture and climate change. Over the years, a number of activities have been carried out to integrate agricultural land management strategy and climate change into the sector programmes. This aims at improving agriculture and food systems.

5.1 Awareness Creation on Climate Change and SLM Technologies

Awareness creation and capacity development on sustainable land management technologies and climate change were some of the activities carried out during the period under review. Some of the technologies being practiced by farmers include compost preparation and usage, water use and management, fodder banks, control of soil erosion, and climate change adaptation and mitigation strategies as depicted in Figure 5.1.

Stone bunding for erosion control

Matured compost for soil fertility improvement

Fodder bank establishment with pigeon pea for erosion control and soil fertility improvement

Cassia woodlot intercropped with legumes for soil fertility improvement

Figure 5.1: SLM technologies implemented in the Upper East and Upper West Regions of Ghana

In an effort to create awareness on issues relating to climate change, its impact and also improve climate knowledge base among senior policy makers, MOAP-GIZ trained the National Climate Change Task Force and Four (4) Regional Environment Officers from the Northern, Brong Ahafo, Upper East and Upper West Regions on climate change and adaptation measures. This was to deepen the task force knowledge in the area. After the training participants were expected to ensure that concerns of climate change and adaptation measures are incorporated into the plans and programmes of the Ministry.

In the same vein members of the Parliamentary Select Committee on Food and Agricultural and Cocoa Affaires were also taken through climate change and its adaptation measures. This was to create awareness among the law makers. After the training, the participants expressed their readiness to disseminate the knowledge acquired to their various constituents.

In the Ashanti Region, Ghana Meteorological Agency (GMA) organized training on, "Climate Change and Benefits of Seasonal Forecast" for their staff and some selected farmers from different communities across the Sekyere Central District during the year. The participants were trained on how to read and record daily rainfall figures from rain gauges. Each farmer was provided with a rain gauge to be install in their communities and record rainfall figures anytime it rains and report monthly to the District Department of Agriculture. These farmers have been reporting rainfall data from their respective communities to the office after the training on monthly basis. It is expected that the training will help farmers to predict effects of climatic changes on their agricultural activities.

The Greater Rural Opportunity for Women (GROW) project of the Department of Foreign Affairs, Trade and Development (DFATD) located in the Upper West Region has introduced selected farmers to Conservation Agriculture (CA) approaches (zero tillage) to protect degraded lands. This will provide women with alternatives to use of tractor services and lower costs of production. Generally, tractor services often represent a high cost item for women farmers, and difficult to access as men's fields typically take priority. The zero tillage farming technique has been very cost effective for beneficiaries. For example, Miss Bamba Kuususulo, of "lelebebe" group from Sanuori Village, in Wa West District, of the Upper West Region, reported of spending GH₵24.00 on weedicide instead of GH₵160.00 for tractor services for a 0.8 hectares land. She therefore made of savings of Gh₵ 126.00 to be used for other family commitments.

During the year, the Sustainable Land and Water Management Project also facilitated and supported the implementation of 930 interventions in 8 districts in the three regions of Northern Ghana, benefiting 3,249 farmers (including 1,602 female) as depicted in Table 5.1 This indicates conscious efforts at targeting more women on SLM Programmes.

Table 5.1: SLM Project Districts and Interventions

District	Technology/intervention								
	Improved cropping System	Soil erosion control	Tree growing	Composting and utilisation	Pasture development	Area (ha)	Beneficiaries		
							Male	Female	Total
Talensi	86	15	14	0	5	120.8	189	117	306
Kasena Nankana West	16	0	52	12	1	88	150	110	260
Bawku West	4	31	15	46	0	48.2	97	110	207
Wa East	0	0	110	10	2	259.6	352	236	638
Builsa South	58	7	37	0	0	103.8	106	45	151
West Mamprusi	180	0	24	0	0	430.9	319	628	947
Sissala East	67	0	10	0	27	179.8	208	223	431
Sissala West	26	21	33	3	18	232.4	176	133	309
Total	**437**	**74**	**295**	**71**	**53**	**1,463.5**	**1,597**	**1,602**	**3,249**

Source: DCS, 2014

5.2 Institutional Capacity Building on SLM Technologies

A number of activities were carried out during the period to strengthen the capacity of staff at all levels. Selected staff of District and Regional Departments of Agriculture across the country were trained on SLM technologies especially in the preparation of watershed development plans. It is expected that this will be incorporated in the work plans at the various levels and implemented to ensure improvement in sustainable management of land and the environment. Table 5.2 presents SLM and climate change capacity development training programmes organized for staff. Also a total of 8,215 farmers (4,524 males and 3,691 females) were trained in natural resource management. The training topics included bushfire control, use of organic manure and tree planting.

Table 5.2: Climate change and SLM capacity development programmes

Activity/training	Training type and staff trained	Specific Activities Implemented
Training of Staff on SLM technologies	Training of 16 Extension Staff in eight (8) project districts on SLM	Trained extension Staff on preparation of Watershed Development Plans, compost preparation, soil and water conservation practices and soil erosion control measures.
Build capacity of staff on climate change	Training of officers at national, regional and district levels on climate change adaptation and mitigation strategies	Collaborated with Care International to train 10 Regional Environmental Desk Officers (REDOs) and 7 climate change task force officers on Participatory Scenario Planning (PSP). (PSP- a tool for assisting farmers to effectively plan using available weather information) Built capacity of 25 MoFA staff from national, regional and district levels on Climate-Smart Agricultural (CSA) technologies
Capacity building in environmental assessment	2 SRID and 2 DCS staff were trained in estimating the cost of environmental degradation and greenhouse gas (GHG) accounting in the agriculture sector	Completed draft agricultural sector reports on GHG (2012-2013) and Cost of Environmental Degradation (2006 – 2012).

Source: Crop Services Directorate, 2014

5.3 Scaling up of SLM and Climate Change Technologies

A private research scientist Dr. Kofi Boah has been involved in the promotion and dissemination of SLM technologies through the establishment of a farm services center for no-till agriculture at Amanchia in the Atwima Nwabiagya District in Ashanti Region. In 2014, over 700 farmers had the opportunity to observe the no-till practice for possible adoption whiles 250 MoFA staff benefitted from training in the no-till (zero tillage) agriculture technology. Figure 5.2 shows some of the fields cultivated under the no-till practice.

Zero-till field with 3 weeks maize plant

Zero-till field with Matured maize plants

Figure 5.2: Centre for No-Till Agriculture Amanchia-Atwima Nwabiagya District

NRGP, continued with interventions to minimize the effect of climate change on agricultural activities. This was done by organizing field days and demonstrations on proven technologies with selected farmers. Field days provided opportunities for co-operating farmers to share the lessons learnt in the conduct of demonstrations with other non-participating farmers in the area where the demonstrations were carried out.

Field days on the following demonstrations have been held in some of the districts in the programme area;

- Integrated Soil Fertility Management using bunding in maize-based fields in combination with organic manure. This was carried out in Fifty five (55) demonstration sites. A total of 1,000 farmers participated in these field days.
- Productivity and Quality Improvement demonstration in rainy season rice production. A total of 200 farmers participated in these field days from the surrounding districts of Savelugu, Walewale, Tolon and Kumbungu Districts.
- Irrigated Vegetable Production. A total of 235 farmers participated in field days at the seven demonstration centres. This was carried out in seven demonstration sites.

5.4. Generation and Management of SLM Knowledge

The Ghana Environmental Management Project (GEMP) is a five year project funded by DFATD. It seeks to increase the capacity of Ghanaian institutions and rural communities to plan and manage initiatives addressing desertification in Northern Ghana. To date, over 11,000 farmers in 32 project communities now practice one or more soil management technologies which include composting, stone lining, half moon, "zai", mucuna cultivation and ridging across slopes resulting in increased soil moisture retention, erosion control and increased soil fertility.

A case in point is the use of droppings from the livestock farm (Sing Resource Center in the Upper West Region) as fertilizer on a 1.6 hectare maize, sorghum, millet and groundnuts fields. Since the farmer started using the animal droppings in 2011, his maize yield has almost doubled from 3.5 bags per 0.4 hectare without use of droppings to 6 bags with the use of droppings. The farmer now has sufficient food to feed his family throughout the year, compared to a hunger gap of 3 months previously.

Furthermore Kanpuo, Zakpe and Kalsagre communities where most of the soil management technologies are practiced, crops such as maize and yam which could not be grown previously are now grown while yield of maize has increased by a similar margin as in Sing.

In a related development, an NGO, NICOL MIRO in the Asante Akim North District in the Ashanti Region increased the cultivation of *eucalyptus* trees to 600 hectares from 582 hectares and 94 hectares of teak from 92 hectares established in 2013 for timber and electric poles in 2014 to improve the micro climate in the project area.

5.5 Policy and Regulations to support SLM

In compliance with the provisions under the Plants and Fertilizer Act., 2010 (Act 803) and its regulation, 8 fertilizer companies, 29 fertilizer products, 8 distributors and 170 fertilizer retailers were registered in the reporting period. In addition, a total of 131 agro-input dealers' shops were inspected in 30 districts in the Northern, Volta, Eastern and the Greater Accra Regions. The inspection revealed that some of the agro-input dealers were unregistered whiles other dealers were involved in mobile sales of agro-inputs from market to market, in contravention of the Pesticide and Fertilizer Laws.

Figure 5.3: Inspection of agro-chemicals by PPRSD Officials (arrowed)

Though the Ministry carries out regular sensitization and monitoring of agro input dealers, the scope is limited due to logistical constraints. There is therefore an urgent need for awareness creation, provision of adequate logistics for post registration monitoring and surveillance to strengthen the pesticides and fertilizer regulatory system in Ghana.

CHAPTER SIX

6.0 Science and Technology Applied in Food and Agricultural Development

This chapter presents the contributions of science and technology to the vision for a modernized food and agricultural sector with thematic areas on improved technologies and stakeholder linkage systems that ensures demand-driven research and utilization of results.

Agricultural production and productivity are dependent on research and technology development, application and adoption. Agricultural systems are dynamic and therefore improved technologies would have to be developed, disseminated and adopted by actors along the value chain to enable them cope with the changing dynamics. The timely use of research results (modern equipment, improved crop varieties, livestock and fish breeds and irrigation facilities) and other interventions is very necessary to enhance agricultural development.

6.1 Uptake of Technology along the Value Chain and Application of Biotechnology

The Ministry in 2014, disseminated 349 improved technologies to 1,358,642 of which 43% were female beneficiaries compared to 375 technologies and 1,708,558 beneficiaries in 2013. This represents 7% and 20% reduction respectively in the number of technologies and beneficiaries reached. Each beneficiary may have benefitted from multiple technologies. Key among the technologies disseminated included;

1. Correct use of agro-chemicals,
2. Row planting for optimum plant population and production,
3. Seed/planting material production techniques,
4. Improved livestock housing.
5. Improved livestock nutrition,
6. Soybean utilization,
7. Fish processing,
8. Post-harvest management of food grains/ legumes and storage,
9. Improved singeing practices,
10. Breed improvement techniques,
11. Pond construction and management and integrated fish farming (rice fish culture).

6.1.1 Adoption of Improved Technologies along commodity value chains

Technology adoption by farmers is dependent on a lot of factors including availability of technologies and how the technology is packaged and disseminated. Value addition prolong shelf life and enhances their economic value of agricultural commodities. In order to reduce post-harvest losses, value addition of priority food crops are promoted. The Ministry through the Directorate of Women in Agriculture Development (WIAD) conducted training programmes to enhance small and medium scale mechanical processing of some priority commodities. Households were also supported with various agro-processing technologies to enhance value addition to their various commodities.

According to literature, gender roles in agriculture showed that more women than men are into agro-processing. In 2014, a total of 223 groups comprising 501(10.4 %) men and 4,338 (89.6%) women were reached with processing technologies on gari, tapioca and konkonte. Other technologies demonstrated to the group include; use of soybean in local dishes, preparation of potaghurt drinks, improved rice parboiling using the improved equipment. This is expected to increase incomes of women.

During 2014 National Farmers' and Fishers' Day, the Ministry exhibited value added agro products along the agricultural value chain. Products made from high quality cassava, yam, sweet potato, plantain and cocoyam flour were exhibited with others from cereals, legumes and fish. This was to showcase to the public the various commodities that could be developed from our local food items. It is expected that women would adopt some as income generating activities and increase the consumption of our local foods.

Dissemination of technologies also depend on the availability of staff especially AEAs to conduct demonstrations to farmers. Currently the challenge of inadequate number of AEAs is one of the key factors hindering the delivery of technology and hence adoption. The current low AEA farmer ratio of 1:1500 instead of the recommended ratio of 1:500 among others is contributing to low agricultural productivity. In the Ministry's quest to improve the ratio, 271 staff replacements made during the period. In an effort to bridge the gap, the Ministry is also promoting the dissemination of extension technologies through FBO development, community field demonstrations, study tours, field days, farmer field schools and e-agriculture. The introduction of e-Agriculture programme has facilitated information dissemination through the use of Mobile phones and the internet. To further enhance the activities of AEAs to reach more farmers, the government has partnered the private sector to provide motorcycles to extension staff.

6.2 Agricultural Research Funding

Research funding contributes to generation of improved technologies that leads to productivity improvement, poverty reduction, growth and sustainable development. In the year 2014, the government spent GH¢ 9, 269,442.87 as against GH¢4,091,884.31 in 2013 on research. This recorded almost 127% increase over the 2013 figure. Though the 2013 releases were from two main sources; GH¢3,701,015.45 received from WAAPP and GH¢390,806.86 received from CIDA, funding from the 2014 figure was only from WAAPP. This was because the CIDA support programme ended in 2013.

6.3 Agricultural Technology Demonstrations

The Ministry through the Directorate of Agricultural Extension Services (DAES), has supported 83 districts to establish 400 (cassava-150; maize-149; rice-28; cowpea-32 and sweet potato- 41) community field demonstrations. Some of the cassava varieties that have been demonstrated are "Otuhia", "Ampong", and "Sika Bankye". Farmers now use improved planting materials because they are high yielding and drought resistance. Apomuden, an orange flesh sweet potato variety and high in Vitamin A, was promoted in the Central, Upper East and Upper West Regions to meet the nutritional requirements of consumers.

The Ministry also established 133 hectares of new fields for primary multiplication of cassava at the 5 agricultural stations e.g. 10 hectares established and maintained at Adidome Farm Institute and Ohawu Agricultural College. Thirty hectares of new fields for secondary multiplication of cassava was also established and maintained at the Regional and District levels. In addition, 0.8 hectares of yam mini sett technology was established at Mampong and Wenchi.

Over the years, the production of cocoyam, area under cultivation and yield have generally seen a continuous decline. To address this situation, the Ministry under the cocoyam program led by WAAPP, had established a total of two on-station and 20 on-farm verification trials at Bekwai (Ahwiren and Bekwai communities) and Ahafo Ano South (Mankranso and Wiowso communities) to determine optimal fertilizer and stand density for increased taro productivity. Out of the 22 verification trails, 11 fields were established for the stand density trials, while the other 11 were established for fertilizer determination. It is expected that this would boost the

cocoyam industry through formal supply of cocoyam seed following high demand for quality seed in production areas.

The Ministry through the Directorate of Agricultural Extension Services, produced four (4) video documentaries on Good Agricultural Practices for sweet potato, cassava and chilli pepper coupled with safe use of pesticides. It is ready to be aired on Ghana Television (GTV). Farmers and the general public knowledge on GAPs on listed commodities would be improved to increase productivity.

6.4 Research Extension Linkages Strengthened and made Functional

The Research Extension Linkage Committees (RELCs) comprise researchers, farmers and departments of agriculture and other key stakeholder's at all administrative levels. It seeks to create a platform that makes technology development demand driven whiles allowing for more targeted and relevant research which enhances adoption of research results.

Farmers and other stakeholders' problems are addressed through research and extension activities. At the national level, the RELC is to ensure that research activities, especially adaptive research, respond to farmers' problems identified through the planning sessions. Bi-monthly Technical Review Meetings (BTRMs), training of extension officers and farmers, field demonstrations, Farmer Field Fora (FFF), Farmer Field Schools (FF_S), and field days were conducted based on issues identified and prioritized by stakeholders.

The success of demand driven research as tracked by the Ministry from 2008 to 2014 is shown in Table 6.1. Over the three year period (2009-2011), an average of 84 planning meetings were held per annum with an average of 66 participants (female 27%). During the year, 10 researchable farmers' constraints were identified and research scientists are currently working on the identified constraints. In 2014, regional RELCs were inaugurated with the respective Regional Directors of Agriculture as Chairpersons in all 10 regions of Ghana. Box 6.1, gives a beneficiary story of the activities of RELCs.

Table 6.1 Research Extension Linkages Committees (RELCs)

Item	2008	2009-2011, (avg)	2012	2013	2014
Number of RELC Planning Meetings	81	84	18	23	11
Average number of Participants (per planning meeting	46	66	38	80	66
Percentage of female participation (%)	27	27	26	34	12.74
Number of problems recommended research during planning meeting	428	322	5	64	79
Number of problems researched and completed	0	80	0	18	22
Percentage of problems resulting from RELC researched into	0	24.8	0	28.1	9.76
Number of problems being researched into	198				13
Level of participation by category in Research Extension Linkages Committee meetings (%).					
Farmers	39	42.33	28	32	25.81
AEAs	21	30	23	28	43.02
Private Sector	10.7	11.33	16	13	6.87
NGOs	7.7	7	12	8	5.19
Others	21.6	9.33	21	19	19.11
Total	100	100	100	100	100

Box 6.1: Success Stories of RELC activities

Seven (7) researchable constraints were identified during the 2011 RELC Planning session and awarded to researchers to address in 2012. As a result of the research, papaya mealybug (*Paracoccus marginatus*) and onion bulb twist problems had been resolved. In the case of papaya, *Aesaphagus papayae*, the bio-agent for the control of the vector (*Paracoccus marginatus*) were mass reared, released and monitored in the Volta, Western, Eastern and Brong Ahafo Regions.

(1) Mr. John Nkansah, a farmer at Adoagyiri-Akwamu in the Nsawam Adoagyiri District mentioned that his 28 hectares pawpaw field which was completely destroyed by the mealy bug in 2011 has been resolved as a result of the release of the bio-agent. So far, a yield of 50 metric tonnes per hectare of pawpaw was achieved in 2014.

(2) Mr. Jonas Twasam, a farmer in Amate in the Kwahu South District also reported that the yield of an onion farm had tripled from 2.32 mt/ha to 6.9 mt/ha as a result of the application of technologies to eliminate the causal agent (nematode) of the onion bulb twist problem as recommended by the researchers.

CHAPTER SEVEN

7.0 Improved Institutional Coordination

Effective institutional coordination creates opportunities for dialogue among stakeholders. It allows stakeholders to jointly agree on priority areas of focus, approach to implementation and progress review, leading to reduction in the duplication of efforts, and efficient use of resources. For effective coordination, the Ministry has established platforms such as the Agricultural Sector Working Group (ASWG), Joint Sector Review (JSR), METASIP Steering Committee and Strategic Analysis and Knowledge Support System (SAKSS).

During the period, these platforms facilitated information sharing, created opportunities for discussion of issues confronting the sector, and recommended appropriate measures to address them. To ensure holistic development of the sector, there is the need for institutional strengthening and capacity development of directorates and agencies within MoFA as well as other MDAs, Development Partners (DPs), Civil Society Organizations (CSOs) and Farmer Based Organizations (FBOs).

7.1 Capacity Strengthening for Planning and Monitoring and Evaluation

Monitoring and Evaluation (M&E) is an integral part of coordination. There is therefore the need for a comprehensive M&E framework to track performance of the sector. One of the key weaknesses of the monitoring and evaluation system in the sector is poor data management and untimely data. To address this challenge, the Ministry sets out to update its current database through an agricultural census, improve quality of data through the Ghana Agricultural Production Survey (GAPS), and harmonize indicators in the agricultural sector.

7.1.1 Agricultural Census

The last agricultural census was conducted 30 years ago -1984/85. The Ghana Statistical Service (GSS) in collaboration with the Ministry has started the process of conducting an agricultural census and is expected to cost US$20 million. This is being done in four phases as follows:

1. Phase I: Preparatory phase,
2. Phase II: administering of core and community modules
3. Phase III: administering of supplementary modules
4. Phase IV: Thematic modules (Crops, livestock, forestry, etc.)

Currently, the first phase has been completed with support from the Food and Agriculture Organization (FAO) at a cost of US$ 370,000. The budget for the second phase was GH¢22 million of which Government of Ghana has provided GH¢ 5.00 million as at the end of 2014 and has promised to add more resources.

7.1.2 Ghana Agricultural Production Survey

The Ghana Agricultural Production Survey (GAPS) aims to improve the quality of data produced by the national agricultural statistics system. GAPS will achieve this objective by broadening and deepening the Multi-Round Annual Crop and Livestock Surveys (MRACLS**).** Currently**, t**he GAPS has been conducted in 60 districts. The target for 2015 is to add 20 more districts. The USAID funded Agriculture Policy Support Project (APSP) is supporting the Ministry to develop a Computer Assisted Personal Interview (CAPI) system to assist with data collection. This is expected to shorten the period of data collection, save cost and improve data quality.

7.1.3 Harmonization of Core Indicators in the Agricultural Sector

Evidence available shows that many partners/stakeholders have different performance indicator matrices for tracking performance and reporting. Some of the indicator matrices in the sector are; CAADP, IFAD Food Security Learning Framework, new CIDA programming framework, NDPC core indicator matrix etc. For consistency, ease of performance tracking and reporting on the sector, these different indicator matrices should be harmonized. A harmonized performance matrix in the sector will ensure that the sector Annual Progress Report provides adequate information to all stakeholders for evidenced-based decision making.

In this regard, the Ministry in collaboration with FAO and GIZ initiated the process of harmonization in 2014. Zonal consultations were to be organized across the country. All regional M&E officers and their assistants and also MIS officers from selected MMDAs were to participate. By December, 2014, only the southern zone consultation was organized with the other zones earmarked for first quarter of 2015. The southern zone comprises; Volta, Greater Accra, Western and Central Regions. Prior to the consultations, a team from the erstwhile PPMED reviewed all the major indicators in the sector. Output of the review and the zonal consultations would be used as input for national validation later in 2015.

7.2 National Implementation Efficiency Ratio

The implementation efficiency ratio measures the effectiveness and efficiency of managers of the sector in planning, budgeting and resource usage. Figure 7.1 shows that the trend in the national implementation efficiency ratio was at its maximum in 2010 and 2011 at a constant ratio of 82%. This reduced to 73% in 2013 and further reduced to 64% in 2014. The declining trend of the ratio may be attributed to the dwindling staff numbers and the late and inadequate release of funds to the Ministry in particular to carry out its activities.

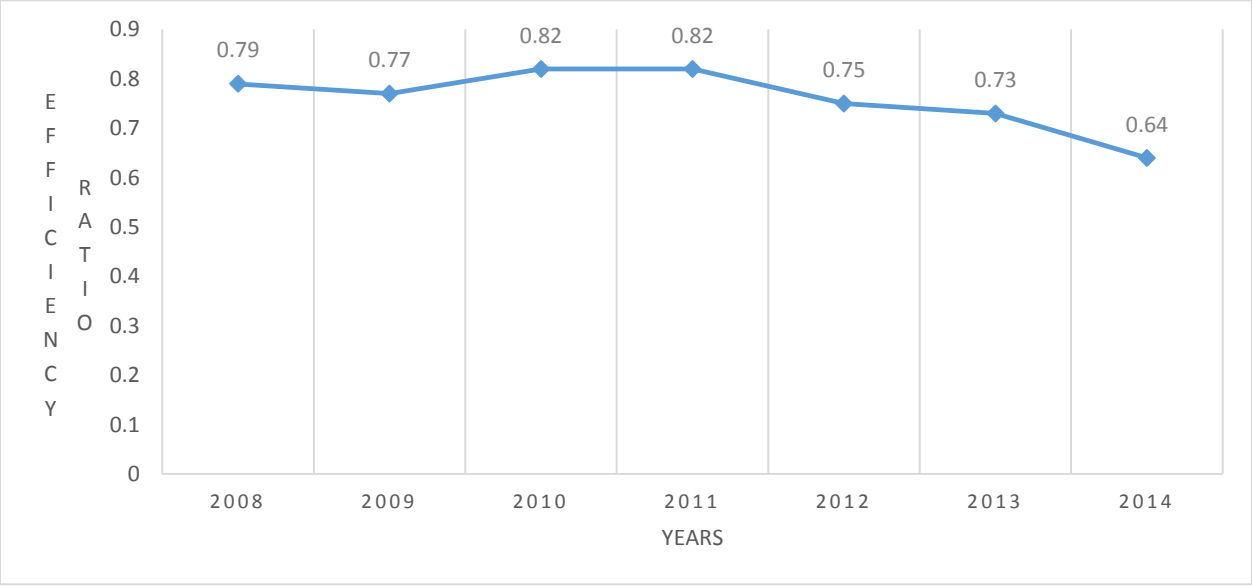


Figure 7.1: Trends in National Development Implementation Efficiency Ratio
Source: RADU-MOFA

7.3 Communication Improvement.

It would be inconceivable to achieve effective coordination in the sector without a comprehensive communication strategy. As a lead agency in the sector, the Ministry facilitated the development of a draft communication strategy document for review and implementation.

The communication strategy seeks to create awareness of the sector policy, inform stakeholders and the general public about the progress towards achievement of sector goals and objectives and, receive feedback from stakeholders on programs and projects being implemented.

The strategy also highlights internal and external communication mechanisms and channels both as an instrument for the provision of information and for eliciting the view of MDAs and other stakeholders.

As part of the strategy, a new Public Relation and Communication Unit was also established under the Directorate of Finance and Administration.

7.4 Human Resource and Capacity Development

The Human Resource Development and Management Directorate of the ministry has the responsibility of ensuring that qualified staff are recruited, trained and retained to promote sustainable agriculture and thriving agribusiness through research and technology development, effective extension and other support services to farmers, fishermen, processors, traders and other stakeholders for improved human livelihood.

7.4.1 Staff Development

The staff strength of the Ministry as at December, 2014, was 2,161 (1,639 male and 522 females) compared to 2013 which was 7,653 (6,686 males and 967 females). The drastic reduction in the staff strength is as a result of the implementation of the decentralization policy where majority of staff have been ceded to the Local Government Service.

7.4.1.1 Training and Employment of Graduates

To ensure sustainable supply of middle level manpower for the sector, the Ministry through its colleges and farm institutes continued to produce technical officers to provide services in the sector. In 2014, a total of 328 students graduated from the colleges and farm institutes.

Until 2004, graduates from the agricultural colleges were absorbed by the Ministry. The Ministry since then replaces exiting staff with graduates from tertiary institutions. The Ghana Cocoa Board, Ghana Education Service, Non-Governmental Organizations and Private Farms and other agricultural related establishments are the other major employers of these graduates.

7.4.1.2 Foreign Training

Foreign training provides the opportunity for staff of the Ministry to receive training to upgrade themselves. The number of staff that benefited from foreign training declined by 17%, from 84 in 2013 to 70 in 2014. The number of female trainees also correspondingly declined by 30%. Countries which offer the training programmes are mainly China, South Korea, Japan and USA. Australia is also a popular destination but due to the biennial nature of their programs, there was no record for 2014.

Table 7.1 Staff Participation in Foreign Training

NAME OF COUNTRY	NO. OF PARTICIPANTS									AREA OF TRAINING
	2012			2013			2014			
	Male	Female	Total	Male	Female	Total	Male	Female	Total	
Japan							1	1	2	Intensive Lowland Rice Cultivation**.**
USA	0	0	0	1	1	2	0	0	0	Masters in Agri-business
S. Korea	6	3	9	11	5	16	2	0	2	Masters in Agriculture and Rural Development, Masters in Fisheries Science
China	62	20	82	50	16	66	50	16	66	Seminar on Agriculture Management for Africa countries, Seminar on Human Resource Development and Co-operation for Superintendent Officials of Africa English Speaking Countries.
Australia				1	1	2				Masters in Agribusiness and Agricultural Science
TOTAL	**68**	**23**	**91**	**63**	**23**	**84**	**53**	**17**	**70**	

Source: HRDMD-MOFA

All Directorates were given quotas based on the training offers received. The selection of the participants was done by the various directorates based on age, gender, rank in the service and academic qualification.

The performances of beneficiaries from training programmes are normally monitored by the Heads of the Directorates. On the whole, training programmes have been beneficial. The beneficiaries have brought the knowledge and exposure gained to bear on their work. The HRDMD intends to form alumni associations for the various foreign training institutions to provide them with the platform to interact and share ideas.

7.4.1.3 Local Training

In addition to foreign trainings, local trainings are also facilitated to build the capacity of staff. These trainings are done by different tertiary institutions in the country. Staff trained locally have been dwindling consistently from 207 in 2012 to 30 in 2014. This is because regional and district staff who hitherto were beneficiaries have been ceded to the Local Government Services.

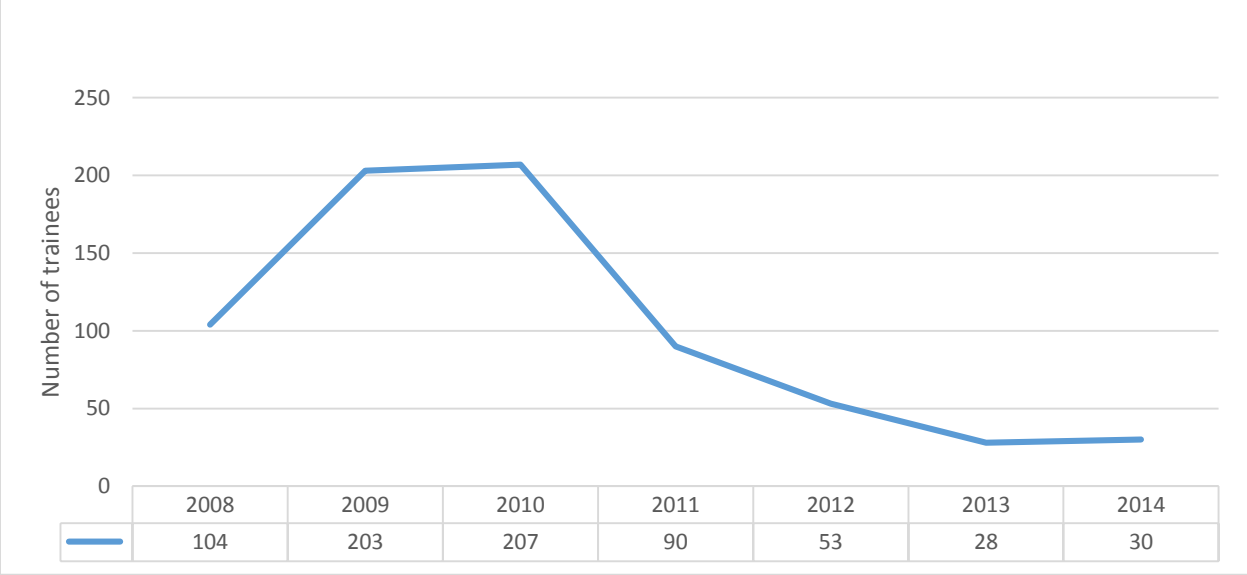


Figure 7.2: Staff Participation in Local Training

Source: HRDMD-MOFA

Twenty- five officers were being trained for their bachelor degrees in Agricultural Extension, Information Technology, Business Administration and Human Resources Management. Two are studying towards their Masters degrees in Community Development and Information Technology. It is expected that upon completion, they will improve on their performance at work.

7.4.1.4 In-service Training

In-service training is organized for beneficiaries whilst on the job. These impacts positively on their technical skills. The various regions recorded training in areas such as engineering, fisheries, human resource, nutrition, food processing among others. The staff that received in-service training declined in 2014 compared to 2013.

In 2013, participants of in-service training were 48,314; the females formed only 4.9%, but in 2014 the beneficiaries had reduced to 4,926 with females being 18.6%. The drastic reduction in the number participating in trainings, was because funds were inadequate.

7.4.2 Staff Exiting MoFA

During the period under review, a total of 81 members of staff exited the Ministry for various reasons including retirement, death, and resignation. Retirement was the reason for the highest number of staff (about 88%). Death represented 11 % while 1% resigned in 2014. (Table 7.2).

Table 7.2: Number of staff exiting Ministry

REASONS FOR EXIT	NUMBER	PERCENTAGE (%)
Retirement	71	87.7
Death	9	11.1
Resignation	1	1.2
TOTAL	**81**	**100**

Source: HRDMD

To ensure continuity in the delivery of services to stakeholders in the sector, the Ministry had facilitated the development of a succession plan for all Directorates. These plans were being reviewed by top-level management of the Ministry.

7.4.3 Staff Replacement

The Ministry of Finance and Economic Planning gave financial clearance to replace 273 staff who exited the Ministry over the years. A total of 271 staff were, however, replaced. This includes 150 professional staff, 24 sub professional staff, 68 technical staff and 29 supporting staff.

7.5 Platform for collaboration between MoFA and other MDAs

To effectively collaborate with other Ministries, Departments and Agencies (MDAs), the Ministry has institutionalized various platforms through which it shares policies, programmes, new initiatives among others for smooth implementation. Some of the platforms are agricultural sector working group meeting, joint sector review and Strategic Analysis and Knowledge Support System. These platforms mainly reduce duplication of roles and hence enhance efficiency, monitor progress of implementation of activities in the sector. The next few paragraphs give a summary of key activities and results of these platforms.

7.5.1 Agricultural Sector Working Group Meetings (ASWG)

The Agricultural Sector Working Group (ASWAG) met four times in the year instead of the six planned. The planned meetings could not be met because of other engagements of chairpersons which slowed activities of the sub-working groups.

Some key achievements by the platform during the year include;

- Identified and mapped key existing investment areas and produced a zero draft of GASIP as an output through a mini retreat.
- Directed and supervised the organization of 2014 Joint Sector Review
- Made follow up on recommendations of 2013 Joint Sector Review

7.5.2 Joint Sector Review (JSR)

The 2014 Joint Sector Review (JSR) was organized in May. The theme was - *"increasing private sector participation in agricultural development – the role of technology adoption for productivity improvemen*. The review took a format of presentations, panel discussions, business forum and exhibition. The key recommendations and status of implementation are in Table 7.3.

Table 7.3: Status of implementation of 2014 JSR

No	Key result area	Status of implementation
1	Establish a strong data collection system that satisfies data needs of the private sector and policy decision makers	The Ghana agricultural production survey (GAPs) and the Agricultural Census are two key initiatives to improve data and statistics in the agricultural Sector**;** ✓ GAPS has been conducted in 60 districts. Plans are far advanced to add 20 more districts. ✓ First phase of the Agricultural Census which was estimated at $370, 000, has been completed with support from FAO. GoG has also released an amount of GH¢ 5,000,000.00 to support the next phase.
2	Develop a tool for prioritizing and planning in the agricultural sector (policy matrix)	A zero draft matrix has been developed. The Zero draft is to be reviewed by the Ministry before it is circulated to the wider stakeholder group for comments by first quarter of 2015
3	Review sector results matrix with the view of aligning it and expending coverage to include all ongoing programmes and initiatives	A zero draft harmonized results framework has been developed. Regional consultations are ongoing on the zero-draft. Inputs from the regional consultations would be used to review the zero-draft to come up with a first draft and then used for national consultations.
4	An inclusive resource allocation process, based on district – level priorities within METASIP ensures coordinated investment and action at district, region and national levels	The Policy Planning and Budget Directorate (PPBD) is in discussions with agricultural-related MDAs, in collaboration with NDPC, to ensure that agricultural priorities are captured in their plans. The PPBD is also discussing plans to facilitate the districts to develop agricultural development plans to link with the NDPC planning guidelines
5	Enhance participation of the private sector in the agricultural development process	The USAID funded Agricultural Policy Support Project is in discussion with the Agriculture Private Public Dialogue Forum (APPDF) to support them implement their action plans.

7.5.3 Strategic Analysis and Knowledge Support System (SAKSS)

The Ghana SAKSS Node was formally launched in January 2011 with the inauguration of its Steering Committee, and the nomination of the members of six thematic groups. The thematic groups are aligned to the six METASIP programme areas. Several activities were implemented during the period. Key among the achievements include;

a. Annual Trend and Outlook Report for 2012 was produced and submitted to ReSAKSS WA.
b. A draft brochure on the functions of SAKSS in Ghana has been initiated and completed by the secretariat. The draft is being reviewed for approval and award for printing.
c. A meeting comprising all representatives of the various thematic groups was conducted to approve the work plan and budget for the period.
d. An IT expert was contracted and has completed work on the website for SAKSS. As agreed the site is being hosted by the main Ministry website. In a related development, a web report writing training was organized for eight staff of the Ministry. This was to sharpen the skills of the participants in web report writing.
e. There was also a review of SAKSS operations in 2014. This was to finalize the operational work plans of the thematic groups so as to improve the development of the SAKSS website, and to discuss and outline modalities for the competitive grant scheme as proposed under the current SAKSS.

7.6 Financial Allocation, Releases and Expenditure

The Government of Ghana makes allocations to the Ministry on quarterly basis to carry out its mandate in the agricultural sector. The following sections highlights approved and actual inflows to the Ministry in 2014, budget composition by fund sources, and budget composition by expenditure components among others.

7.6.1 Total Inflows from Funding Sources

The Government of Ghana (GoG), in the 2014 financial year, allocated a total budget of GH¢306.89 million to the Ministry to achieve its mandate. Out of the total budget, the Government's contribution was GH¢128.12 million representing 41.0%, whilst Development Partners' (Donors) contribution was GH¢178.77 million representing 59.0%. Included in the total GoG contribution is an amount of GH¢ 2.17 million that was to be generated from internal sources (IGF) and GH¢52.18 million from the Annual Budget Funding Amount (ABFA). The actual inflows from GoG, IGF and Donor sources at the end of the year amounted to GH¢ 314.84 million representing 102.60% of budget compared to 2013 when the actual inflow was GH¢ 216.20 million representing 70.65% over the allocated budget of GH¢ 306.03. (Table 7.4)

Table 7.4: Budget Composition by Fund Source, 2013 and 2014

Fund Source	2013 (GH¢ million)		Percentage Achieved (%)	2014 (GH¢ million)		Percentage Achieved (%)
	Approved Budget	Actual Inflows		Approved Budget	Actual Inflows	
GOG	140.90	108.16	76.76	73.77	73.03	99.00
ABFA	20.00	6.28	31.40	52.18	57.57	110.33
IGF	2.26	3.24	143.36	2.17	0.99	45.62
DONOR	142.87	98.52	68.96	178.77	160.07	89.54
OTHER	-	-	-	-	23.18	-
TOTAL	**306.03**	**216.20**	**70.65**	**306.89**	**314.84**	102.59

Source: Budget Unit, MoFA& Finance Directorate

7.6.2 Expenditure Comparison for 2014 and 2013

Of the total GH¢ 314.84 million released to the Ministry by MOFEP and Donors per approved budget in 2014, an amount of GH¢285.29 million was spent as against GH¢212.49 million for 2013 which represents 34.26% over the previous year (Table 7.5). Employees Compensation costs for 2014 amounted to GH¢ 48.63 million. The comparative figure for 2013 was GH¢106.95 million representing a decrease of 45.47%. The high amount of compensation for employees expenditure incurred in 2013 was mainly due to salary enhancement for all Civil Servants in that year. However, in 2014, compensation of employees was overspent by 30.0% compared to the approved budget of GH¢35.00 million. The reason was that, whereas the Ministry's budget was for only 63 Cost Centres, compensation of employees figures received from the Controller and Accountant General's Department (CAGD) included some decentralized MoFA Cost Centres, contributing to the 30.0% overspending.

Actual expenditure on goods and services and assets (investment) expenditures amounted to GH¢167.16 million and GH¢69.50 million respectively in 2014, whilst the comparative expenditures for 2013 were GH¢25.99 million and GH¢79.55 million representing an increase of 543.2% and a decrease of 12.63%

respectively. The increase in expenditure on goods and services was that some items *(e.g. Fertilizer Subsidy)* which were originally budgeted for under Assets were expensed as goods & services due to reclassification within the GIFMIS and the reporting format of some donor projects. The decline in the expenditure in assets was attributed to the closure of some donor funded projects *(e.g. RAFiP, WFP, SSIDP, SFASDEP and EMQAP)*.

In total, GoG's contribution to the Ministry's actual expenditure in 2014 was GH¢153.49 and Donors, GH¢ 131.80 representing 53.80% and 46.20% respectively. (Figure 7.3)

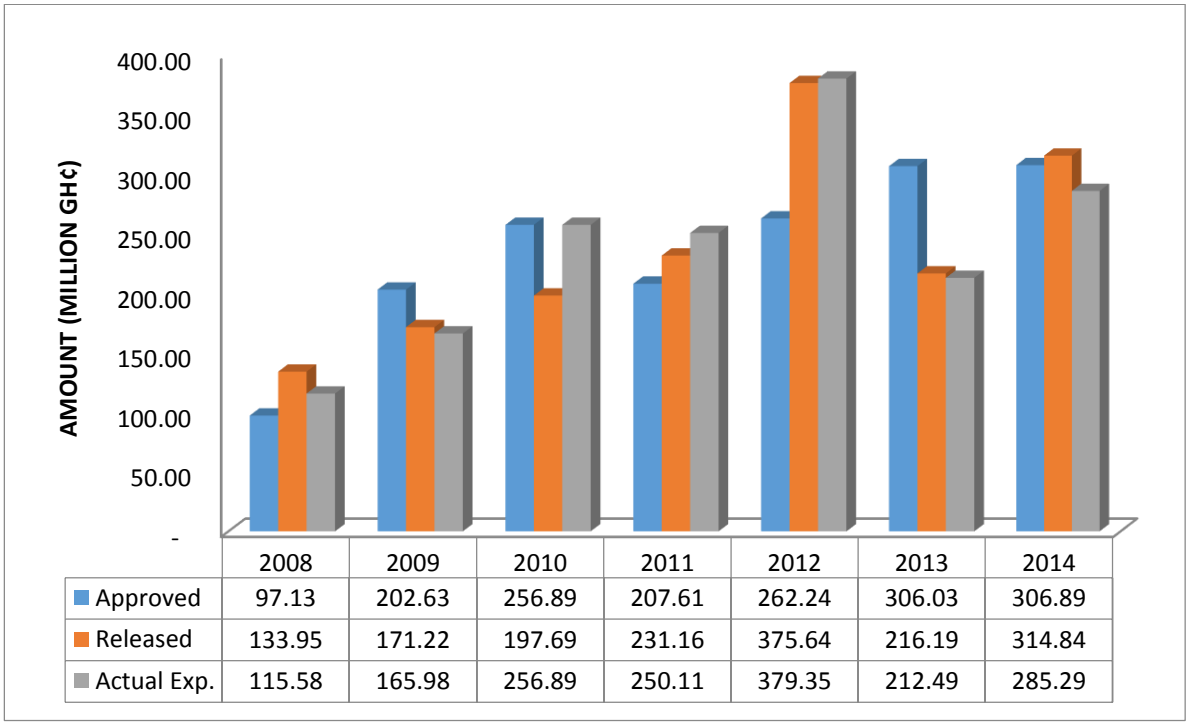
Table 7.5: Budget Composition by Expenditure Components – 2013 – 2014 (in millions)

Fund Source	2013 (GH¢ million)		Percentage Achieved (%)	2014 (GH¢ million)		Percentage Achieved (%)
	Approved Budget	**Actual Expenditure**		**Approved Budget**	**Actual Expenditure**	
Employee Compensation	80.33	106.95	133.14	35	48.63	130.37
Goods & Services	40.57	25.99	64.06	48	167.16	348.25
Assets	185.13	79.55	42.97	223.59	69.50	31.08
TOTAL	**306.03**	**212.49**	**69.43**	**306.89**	**285.29**	**92.96**

Source: Finance Directorate

Figure 7.3: Donor and GoG Contribution to Actual Expenditure
Source: Source: Finance Directorate

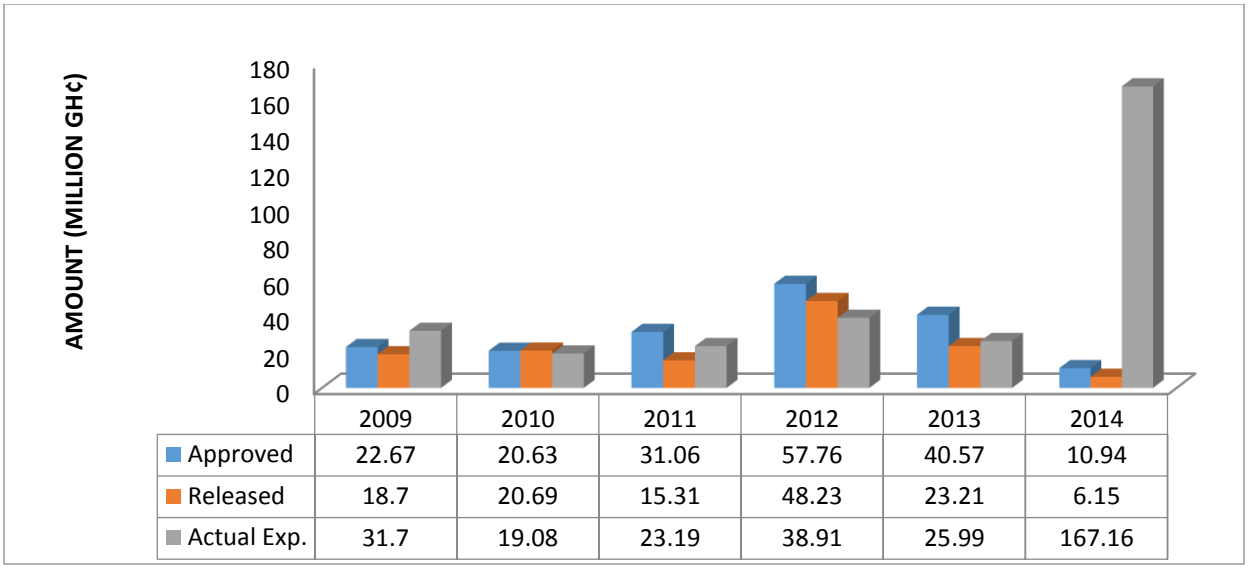
In general, total amount budgeted (approved), amounts released and actual expenditure show increasing trend in nominal terms from 2008 until 2012 after which they declined in 2013 (Figure 7.4). There was however a marginal increase in the above components in 2014. The amounts released and actually expended in 2012 were highest between 2008 and 2014. This was as a result of implementation of the Single Spine Salary Structure to enhance salaries of Civil Servants coupled with huge investments to cater for infrastructure for irrigation, Block Farm and Fertilizer subsidy among others. Whereas amounts estimated (approved) by the Ministry in 2014 and 2013 were almost similar, amounts released and actual expenditures were higher in 2014 than 2013. This was as a result of increased expenditure on goods and services (GH¢167.16 million) in 2014 compared to GH¢ 25.99 million in 2013 requiring increased donor contribution from GH¢98.52 million (69%) of approved donor budgets in 2013 to GH¢160.07 million (89.50%) in 2014.



	2008	2009	2010	2011	2012	2013	2014
Approved	97.13	202.63	256.89	207.61	262.24	306.03	306.89
Released	133.95	171.22	197.69	231.16	375.64	216.19	314.84
Actual Exp.	115.58	165.98	256.89	250.11	379.35	212.49	285.29

Figure 7.4: Actual Expenditure against Releases and Approved Budget from all Sources - 2008-2014 (GH¢ million)
Source: Finance Directorate

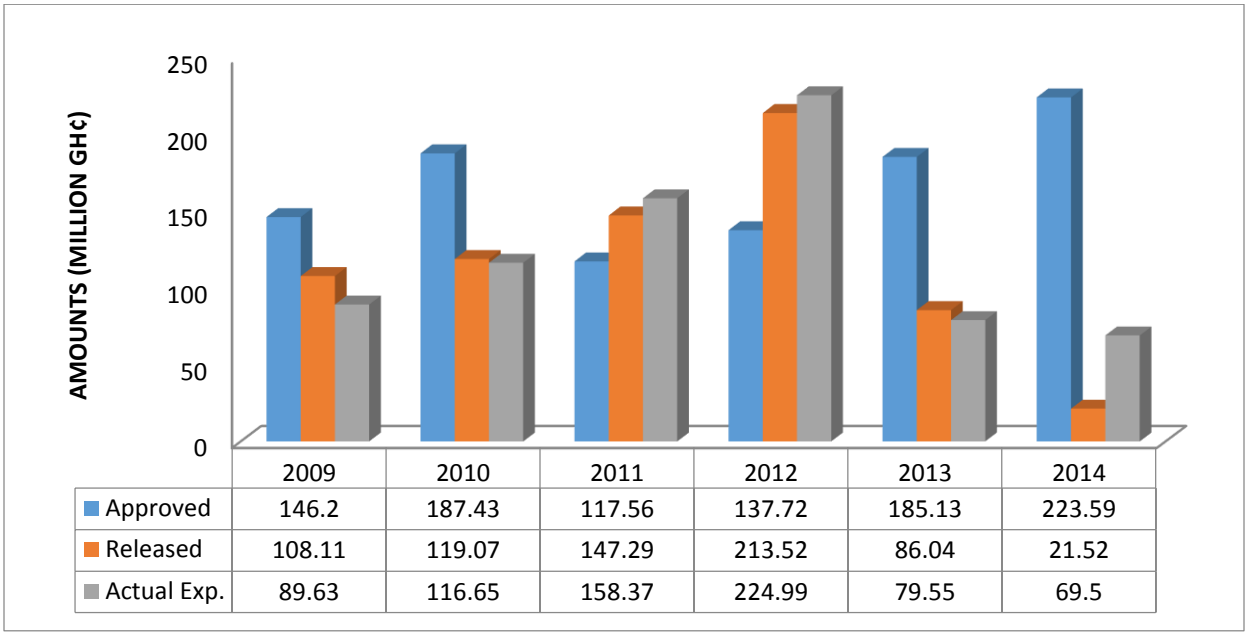
Figure 7.5 shows actual expenditure amounts for goods and services against releases and approved budgets from 2008 to 2014. With the exception of 2012, actual expenditure always exceeds releases. This is attributed to expenditures not captured in the approved budgets. Figure 7.6 shows similar trend with respect to actual expenditure against approved amounts and releases.



	2009	2010	2011	2012	2013	2014
Approved	22.67	20.63	31.06	57.76	40.57	10.94
Released	18.7	20.69	15.31	48.23	23.21	6.15
Actual Exp.	31.7	19.08	23.19	38.91	25.99	167.16

Figure 7.5: Actual Expenditure on Goods and Services against Releases and Approved Budgets- 2008-2014 (GH¢ million)

Source: Finance Directorate.



	2009	2010	2011	2012	2013	2014
Approved	146.2	187.43	117.56	137.72	185.13	223.59
Released	108.11	119.07	147.29	213.52	86.04	21.52
Actual Exp.	89.63	116.65	158.37	224.99	79.55	69.5

Figure 7.6: Actual Expenditure on Assets (Investments) against Releases and Approved Budgets- 2008-2014 (GH¢ million)

Source: Finance Directorate.

7.7 Availability of Credit to the Agricultural Sector

In addition to Government sources, other financial institutions also support agricultural activities through credits to stakeholders in the sector. Some of these institutions include Agricultural Development Bank (ADB), Export Development and Agricultural Investment Fund (EDAIF), and projects and programmes.

7.7.1 Loan Approval to the Sector by Agricultural Development Bank

Lending by the Agricultural Development Bank (ADB) to the sector generally observed an upward trend from 2008 with an amount of GH¢ 118.49 million till it peaked with an amount of GH¢ 146.87 million in 2012. This was followed by a sharp decline in 2013 but has since recovered in 2014 with an amount of GH¢ 101.24 million in credit to the sector. Between 2008 and 2014, credit by ADB to players in the sector totalled GH¢ 852.88 million.

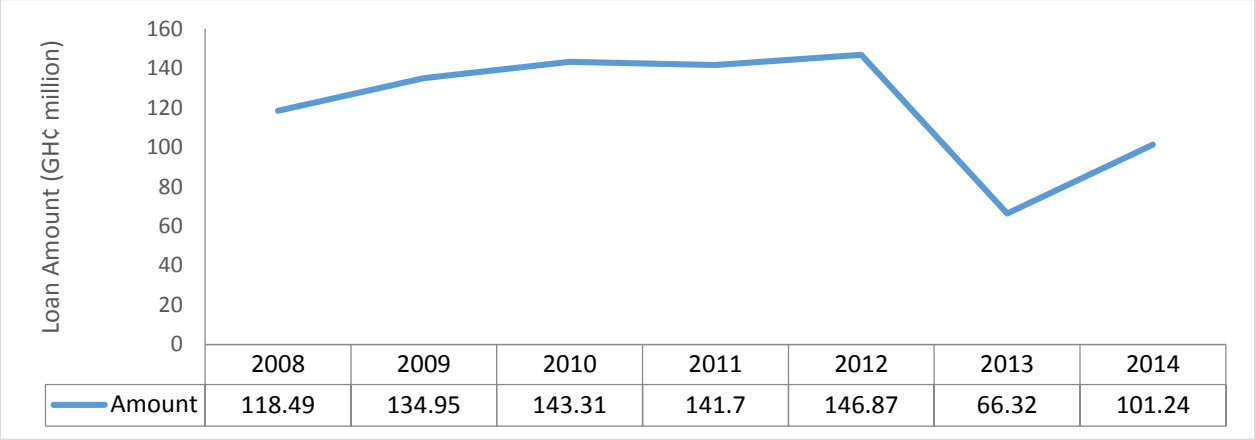


Figure 7.7: Total loan approval to the Agricultural Sector by ADB (GH¢ Million)
Source: ADB

The bank in the year 2014 approved a total amount of GH¢ 101.24 million to finance activities in the agricultural sector with the breakdown shown in the Figure 7.8. The facility approved and disbursed amounted to 59.55% of funds allocated to the sector.

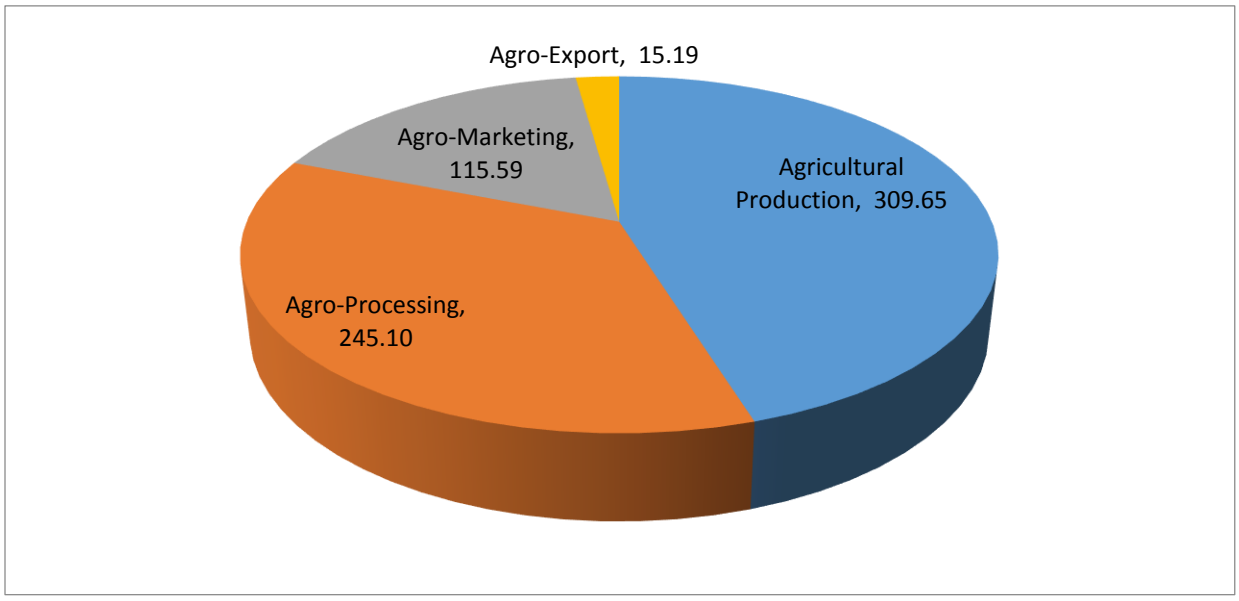


Figure 7.8: ADB Loan Approval to Agriculture Sector (Million GH¢)
Source: Agricultural Development Bank

The facilities were granted as either short term facilities to meet working capital requirements such as purchase of production inputs for primary production with short gestation, payment of salaries and utilities, and purchase and distribution of agro inputs. The other areas of short term loans include foodstuff marketing and grain inventory, and purchase of raw materials for agro-processing. Areas of support for medium to long term loans are to purchase of plant, machinery and equipment and finance primary production with gestation period in excess of 12 months.

Table 7.6: Loan Approval to Agriculture by sub sector ADB (Million GH¢)

Subsector/Year	2008	2009	2010	2011	2012	2013	2014
Agricultural Production	10.47	11.31	76.51	33.42	88.43	42.111	47.4
Agro-Processing	6.17	8.23	45.52	84.51	35.14	18.83	46.70
Agro-Marketing	32.50	42.03	14.98	12.92	0.61	5.381	7.17
Agro-Export	2.85	5.03	3.62	1.25	2.44	-	-
Total	**51.99**	**66.6**	**140.63**	**132.1**	**126.62**	**66.322**	**101.24**

Source: ADB

7.7.2 Loan Disbursement by EDAIF

The Export Development and Agricultural Investment Fund (EDAIF) over the years disbursed a total of GH¢ 199,335,584.93, 24% of which was grants. In 2014, EDAIF disbursed about 81% of the total amount approved for the period. This amounted to GH ₵101,179,111.91. Over 51% of the disbursement went to the area of agro-processing as both grant and credit as against production.

Table 7.7: EDAIF Facility Disbursement (2014)

No	Sector	Amount disbursed (GH¢)	Percentage	Number of Beneficiaries
1	Agro-Processing and Exporters (Grant)	28,965,143.97	28.63	26
2	Agro-Processors and Exporters (Credit)	23,408,641.10	23.14	13
3	Project Account (Poultry)	3,523,675.00	3.48	3
4	Project Account (Rice)	21,466,053.00	21.22	363
5	Project Account (Mango)	3,993,572.84	3.59	72
6	Ghana Irrigation Development Authority	19,822,026.00	19.59	6 sites
TOTAL		**101,179,111.91**	**100.00**	**n/a**

Source: EDAIF

It must be noted that, the successes as enumerated above were not achieved without challenges. The challenges faced by financial sector in its financial intermediation to the agricultural sector, include but not limited to the absence of long term sources of funding. The short term nature of the Bank's deposits makes it difficult to match them against the long term loan requirements. This led to over reliance on external lines of credit. This makes agricultural financing unsustainable as these sources dry out quickly and their real values are lost as a result of loan default and inflation.

7.7.3 Performance of the Out-grower and Value Chain Fund at December 2014

The Out-grower and Value Chain Fund being implemented by the Ministry committed a total of GH¢ 14,892,829.00 in support of agricultural activities in the sector. This amount supported activities such as rice production and processing, rubber plantation, oil palm production and processing and pineapple out-grower schemes. Further analysis of the data and the result presented in Table 7.9 shows that 68.13% of the total amount went to support rice whilst 20.30%, 4.90% and 6.67% supported rubber, oil palm and pineapple respectively.

Table 7.8: Loan disbursement by OVCF

Commodity Schemes	Total Amount Approved (GH¢)	Area Planted as at Dec 31, 2014 (ha)		Total Number of Out-growers	Amount Disbursed as at Dec 31, 2014 (GH¢)		Total Amount Disbursed as at Dec 31, 2014 (GH¢)
		(TO)	Out-growers		TO	Out-growers	
Rubber	8,532,332.00	N/A	988.3	588	N/A	3,022,580.28	3,022,580.28
Oil Palm	981,630.00	N/A	197	77	450,000.00	215,044.00	729,944.00
Rice	10,829,500.36	207	110	136	9,599,500.36	546,534.00	10,146,034.36
Pineapple	994,270.00	N/A	22	63	601,140.00	393,130.00	994,270.00
Maize-soya-Sorghum	2,000,000.00	-	-	-	Nil	nil	nil
Cassava	3,149,792.00	-	-	-	Ni	nil	nil

Source: OVCF

7.7.4 Credit Disbursement by Northern Rural Growth Project

The Northern Rural Growth Project (NRGP) during the period supported FBOs with a total of GH¢1,629,055.50. Details of the distribution is indicated in Table 7.10.

Table 7.9: Credit Disbursements by Region under NRGP

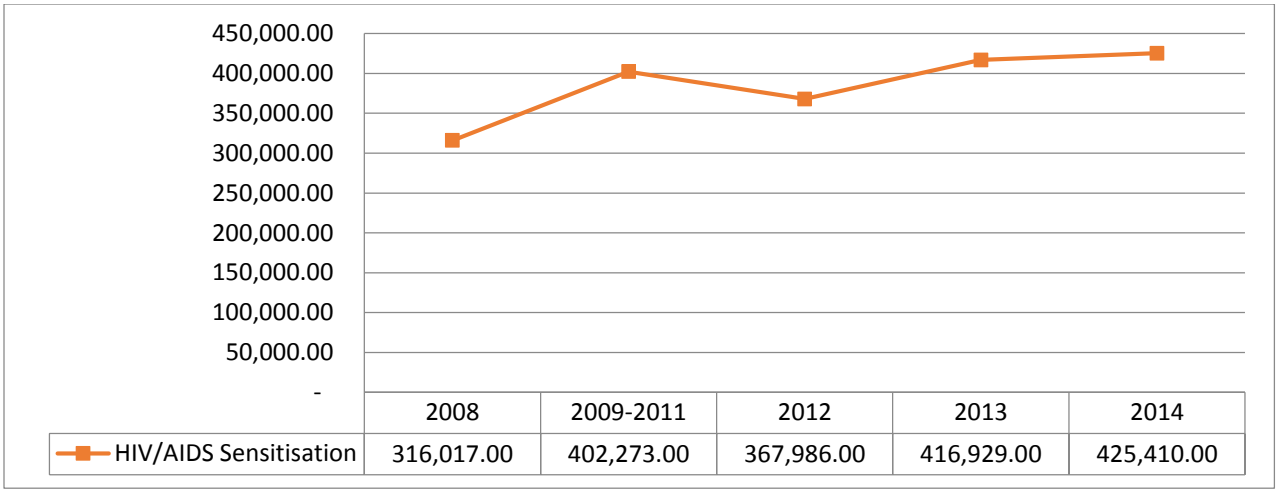
REGION	AMOUNT GH¢	
	2013 DISBURSED	**2014 DISBURSED**
NR	*394,324.37*	*659,777.00*
UWR	*219,457.50*	*36,311.50*
UER	*726,939.00*	*932,967.00*
BAR	*204,893.00*	*177,572 .00*
Total for FBOs	1,545,613.87	1,629,055.50

Source: NRGP, 2014 Annual Report

During the period under review, a total amount of GHC1.5 million was approved as credit for FBOs in 2013 as against GHC 1.6 million in 2014. Some of the FBOs could not access the credit due to delayed rains. In some cases, the loans were approved late. To avoid high default rates some of the farmers postponed accessing the credit to the next cropping season. Many of the small holder farmers, however, cultivated using their own funds. At the time of reporting, payment of loans received by farmers were not due.

7.8 HIV/AIDS

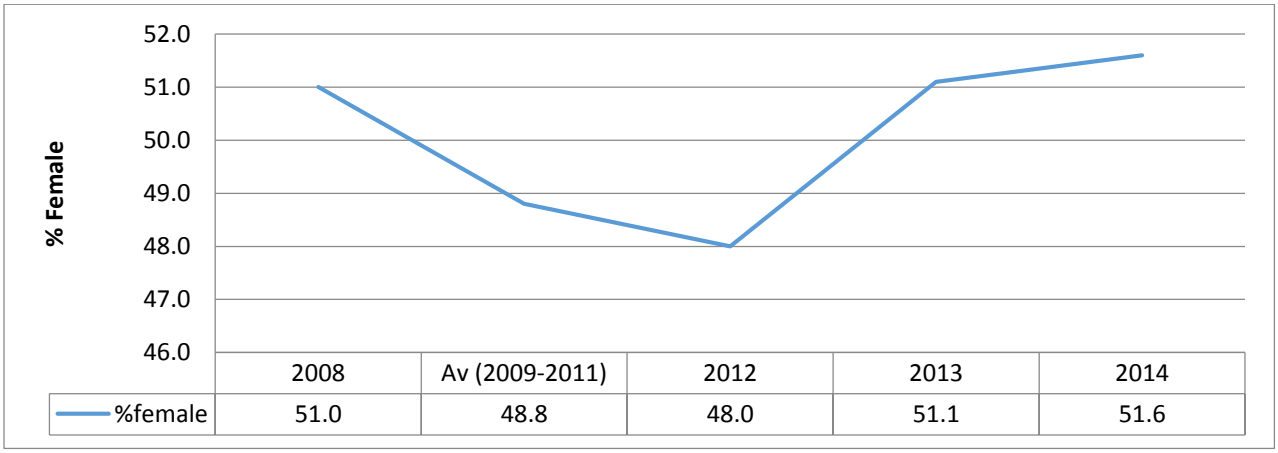
Figure 7.9 shows that there has been an upward trend in the number of farmers that were sensitized on HIV/AIDS from 2008 to 2014. However there was a decline of 32.9% from 2011 to 2012 and upward trend afterwards. The year 2014 recorded 2% increase in the number of farmers sensitized on HIV/AIDs over the year 2013. A report on the implementation of the Ghana Shared Growth and Development Agenda (GSGDA), 2010-2013, put together by the National Development Planning Commission (NDPC) in 2012 noted, among other indicators, that new HIV infections are decreasing. According to the report, the prevalence rate among young persons aged 15 to 24 years which is used as a proxy for new infections, declined from 1.7% in 2011 to 1.3% in 2012.



	2008	2009-2011	2012	2013	2014
HIV/AIDS Sensitisation	316,017.00	402,273.00	367,986.00	416,929.00	425,410.00

Figure 7.9: Number of Farmers Sensitized on HIV/AIDS
Source: RADU Report, 2008 – 2014

Figure 7.10 reveals that there has been a downward trend in the percentage of women sensitized on HIV/AIDS from 2008 to 2012 and from thence recorded significant increase in the percentage women sensitized from 2013 to 2014. The year 2014 recorded 0.5% percentage increase over the year 2013.



	2008	Av (2009-2011)	2012	2013	2014
%female	51.0	48.8	48.0	51.1	51.6

Figure 7.10: Trends in percentage of women Sensitized on HIV/AIDS
Source: RADU Report, 2008 – 2014

APPENDICES

Appendix One

Regional Weather Indicators

Region	Indicators
Greater Accra	Generally, the volume and distribution of rainfall was favourable having effect on key indicators, eg green vegetation, growth in crops and pasture. There was a reduction in bush fire occurrences due to the rainfall and intervention on bush fire prevention and control which was an improvement over the previous year. However, some districts, eg. Ada East and West experienced dryness and wind erosion especially in the first and fourth quarters of the year. Whereas, Ga Central experienced some floods during the second quarter especially in the valleys destroying crops planted along the lowland areas.
Central	The first quarter experienced harmattan which was short lived and followed by some rains. The second quarter also saw very favourable weather of 429.3mm rains with 22 wet days which was good for cropping in the major season. The third quarter experienced a substantial amount of rains as compared to the previous years. The second and third quarters made available a lot of pasture for livestock. The last quarter had minimal amount of rainfall depicting the onset of the harmattan period.
Western	There were rains accompanied with strong winds in the mid and southern zones of the region during the year. There were also cloudy weather conditions characterized by high humidity. The period was generally wet, resulting in the growth and development of natural pastures. The even distribution of rainfall led to abundance of some food commodities particularly plantain because the annual lodging of plantain and its resultant scarcity was virtually absent. Crop yields were generally better except cocoa which was negatively affected. Though the third quarter generally recorded below average rainfall, some floods occurred in the Bia, Suaman and Bibiani districts destroying farms and farm access routes contributing to poor accessibility to these areas.
Eastern	There was a shift in the regular rainfall pattern for the major season. The rains started late April to early May for land preparation. Apart from the first quarter, rainfall frequency and distribution were normal especially in the third and fourth quarters. There was no significant break between the major and minor season and also less cases of flooding in flood prone areas compared to the previous year. The usual break between the major and minor season was absent especially in the forest areas of the region. This affected land preparation for minor season maize production with tomato production also being affected. The high humidity experienced in major tomato growing districts notably Fanteakwa caused tomato plants to absorb too much water causing bursting and fruits abortion. The last quarter of the year, however recorded rains that were favorable for crop production in the transitional zones of the region, especially in the Kwahu Affram Plains North and South Districts.
Volta	Vegetative cover for 2014 was better compared to 2013. This was a result of favourable rainfall pattern experienced in 2014. However there were floods in Ho-Municipal (Akrofu), Agortime Ziope and Adaklu districts which affected rice, tomato and maize fields. The even distribution of rainfall in 2014 resulted in shorter drought periods leading to small streams and water bodies not drying up in 2014 as compared to 2013. As a result, dry season irrigation was not affected much and there was enough water for livestock. Production figures recorded for major crops in 2014 were slightly higher compared to 2013.

Region	Indicators
Ashanti	The onset of the major season rainfall was normal and reliable across the region. Due to the early rains, major season planting of crops started on time for all districts. The region, however, experienced dry weather condition in August and heavy rainfall in July and September. The heavy rains in July created high humidity conditions which made harvesting of major season maize difficult resulting in high post-harvest losses of maize. Minor season rainfall was also normal resulting in early planting of maize with no reported anomalies.
Brong Ahafo	Averagely, the amount of rainfall and the number of rainy days in 2013 were higher than that of 2014. This resulted in a better food production for 2013 when compared to that of 2014. Generally, 2014 experienced pockets of dry spell from mid-August to the end of December affecting minor season production of crops. Most maize farmers were compelled to shift into producing other crops like rice in the inland valleys and cowpea in the savannah and the transitional areas.
Northern	The weather was characterized by sunshine, cloudy, warm conditions and erratic rainfalls. Total rainfall in terms of amounts and wet days were lower in 2014 compared to 2013. Although the rainfall during the period was erratic and not evenly distributed it created favourable conditions for early land preparation for groundnut and maize production.
Upper East	Generally, rainfall for the period was below normal in terms of quantity and distribution than the previous year. The period experienced erratic rainfall, prolonged dry spell for 3weeks in June. This affected cropping activities, reduced area planted and a reduction in production of crops such as rice, millet and sorghum. It also negatively affected pasture growth. One of the major irrigation schemes (Tono) also dried up as a result of the erratic rainfall which negatively affected the second cropping season.
Upper West	The rains started and stopped in February across the region with a moderate distribution pattern. However, within the second half of the month of May, there was a drastic and sharp drop resulting in dry spells in May, June, and July. This situation persisted through to the last week of August. The month of August saw a significant improvement, but the distribution pattern was not encouraging. The dry spell lasted for 18 consecutive days in May and 17 consecutive days in June and in July it lasted for 10 consecutive days with intermittent and insignificant rainfall of less than 10mm from 4th to the end of July 2014 in Wa Municipality. Districts that were affected the most are Wa Municipality, Nadowli-Kaleo, Wa West, Jirapa and Wa East. However, Lawra, Nandom and Lambussie-Karni, parts of Sissala East and West Districts, as of July, had generally stable rainfall conditions compared to the other parts of the region.

Source: DADU/RADU

Appendix Two

Domestic Food Supply and Demand Position (2008-2014)

Crop	Total Domestic Production ('000 MT)					Total Domestic production Available for Human Consumption(000MT)					Estimated National Consumption ('000 MT)					Deficit/Surplus ('000 MT)				
	2008	Av (2009-2011)	2012	2013	2014*	2008	Av (2009-2011)	2012	2013	2014*	2008	Av (2009-2011)	2012	2013	2014	2008	Av (2009-2011)	2012	2013	2014*
Maize	1,470	1,725	1,950	1,817	1,762	1,029	1,208	1,365	1,163	1,233	1,024	1,080	1,113	1,195	1,191	5	128	252	109	42
Rice (milled)	181	200	289	411	423	158	174	251	637	368	561	592	610	637	653	(404)	(418)	(359)	(280)	-285
Millet	194	216	180	179	156	169	188	156	133	135	117	123	127	133	136	52	65	29	23	-1
Sorghum	331	321	280	277	259	288	279	244	133	225	117	123	127	133	139	171	156	117	109	86
Cassava	11,351	13,335	14,547	16,116	16,524	7,946	9,335	10,183	4,058	11,567	3,575	3,769	3,884	4,089	4,157	4,371	5,565	6,299	7,223	7,410
Yam	4,895	5,864	6,639	7,260	7,119	3,916	4,692	5,311	3,314	5,695	2,923	3,082	3,175	1,328	3,399	993	1,610	2,136	2,491	2,296
Cocoyam	1,688	1,386	1,270	1,268	1,299	1,604	1,317	1,207	1,062	1,234	935	986	1,016	1,009	1,088	669	331	191	143	146
Plantain	3,338	3,573	3,557	3,565	3,786	2,837	3,037	3,023	2,251	3,218	1,983	2,091	2,154	2,257	2,307	854	947	869	779	911
Groundnut	470	507	475	475	427	423	457	428	319	384	281	296	305	319	326	142	161	123	109	58
Cowpea	180	220	223	206	202	153	187	190	133	171	117	123	127	133	136	36	64	63	43	35
Soybean	75	141	152	153	142	64	120	129	53	120	47	49	51	53	54	17	70	78	77	66

Source: SRID, MOFA **Provisional*

Appendix Three

National Irrigation Production

	Area of Irrigated Land (Hectares)						Land Intensification Ratio						Production of Irrigated Crops (mt)				
	2010	**2011**	**2012**	**2013**	**2014**	**% Change**	**2010**	**2011**	**2012**	**2013**	**2014**	**% Change**	**2010**	**2011**	**2012**	**2013**	**2014**
National																	
Total irrigated areas developed (formal and informal)	27,879	28,303.50	28,323.50	28,323.50	29,507.71	4.18	-	-	-	-	-		-	-	-	-	
Total non-formal irrigated developed areas	17,636	17,636	17,636	17,636	18,820	7	-	-	-	-	-		-	-	-	-	_
Total formal irrigated area developed	10,242.50	10,667.50	10,687.50	10,687.50	10,687.50	0.0	-	-	-	-	-		-	-	-	-	_
Total formal irrigated area cropped	8,860	9,745.10	9,913.10	11,136.20	9,367.90	(15.88)	0.87	0.91	0.93	1.04	0.88	(15.72)	Veg: 11,518.2 Cereal: 38,756.0 Leg: 119.8	Veg: 12,022 Cereal: 38,709.0 Leg: 190	Veg: 11,235 Cereal: 41,633 Leg:235	Veg: 13,813.30 Cereal:41,373 Leg: 78	Veg: 22,541.6 Cereal: 31,977.6 Leg: 126.9
Total informal irrigated area cropped	7,169.00	9,798	10,138	10,541.70	26,470.67	151.10	0.41	0.56	0.57	0.6	1.41	134.42	Veg: 30,006.4 Cereal: 12,552.8	Veg: 34,365 Cer: 19,762	Veg: 40,098 Cer: 12,544	Veg: 40,544 Cer: 12,743.1	Veg: 66,104 Cer: 64,084.9
Total formal area irrigated	4,370	4,923.50	5,247	5142.1	3,543	(31.10)	0.43	0.46	8.2	0.48	0.33	(30.94)	Veg: 1,212.5 Cereal:	Veg: 5,648 Cereal:	Veg: 5,120 cer:	Veg: 5,082.2 Cer:22,350.30	Veg: 8,0905 Cer: 11,046.77

	Area of Irrigated Land (Hectares)						Land Intensification Ratio						Production of Irrigated Crops (mt)				
with single annual crop													3,838.5 Leg: 12.9	20,049 leg: 46	21,366 leg: 156	Leg:34.30	Leg:65.88
Total informal area irrigated with single annual crop	3,045.60	4,521	6,350	6,570.40	10,874.9	58.76	0.17	0.26	48.4	0.37	0.55	49.80	Veg: 18,291 Cereal: 7,652	Veg: 12,350 Cer: 10,104	Veg: 11,136.4 Cer: 11,900	Veg: 25,253 Cer: 7,942.7	Veg: 21921.73 Cer: 23599.48
Total formal area irrigated with double annual crop	4,490	4,822	4,666.00	4,785.50	5,824.90	21.72	0.45	0.45	0.44	0.45	0.55	21.12	Veg: 9,995.9 Cereal: 31,643.5 Leg:106.8	Veg: 6,374 cer: 18,660 leg: 132	Veg: 6,114.9 Cereal: 20,266.4 leg: 78.6	Veg:8,731.10 Cer: 19,023.20 Leg: 44.3	Veg: 14,451.06 Cer: 20,930.87 Leg: 61.09
Total informal area irrigated with double annual crop	2,360	3,103	31.5	2,312.60	8,156.10	252.68	0.13	0.18	31.5	0.13	0.43	233.37	Veg: 9,878 Cereal: 4,131.5	Veg: 10,370 Cer: 8,485	Veg: 15,398 Cer: 612.8	Veg:8,893.7 Cer: 2,795.6	Veg: 25010.12 Cer: 19478.48
Total formal area irrigated with three annual crops	-	-	-	-	-		-	-	-	-	-		-	-	-	-	
Total informal area irrigated with three	1764	2,176	23.4	1,658.70	7,883.30	375.27	0.1	0.12	23.4	0.09	0.42	365.4256	Veg: 7,838.4 Cereal: 3,088.7	Veg: 7,049 Cer: 5,767	Veg: 15,563 Cer: 31.2	Veg:6,379 Cer:2,005	Veg: 19,172.2 Cer: 21,006.9

	Area of Irrigated Land (Hectares)						Land Intensification Ratio						Production of Irrigated Crops (mt)				
annual crops																	

Appendix Four

Regional Irrigation Production

	Irrigated areas developed (hectares)	Number of crop cycle in irrigated areas, with respective surface irrigated cropped and harvested areas in 2014 (hectares)			Average land intensification ratio on irrigated cropped area	Production of irrigated crops	
		First crop	Second crop	Third crop			
UPPER EAST						**Total**	**Mt**
Formal	**3,942.00**	858.92	1,462.00	-	**0.59**	Vegetable	2,089.4
		-	-	-		Cereal	7,479.0
		-	-	-	-	Legume	17.0
Informal	2,990.81	327.72	509.76	21.47	**0.46**	Vegetable	8,712
		-	-	-	**-**	Cereal	1.5
		-	-	-	**-**	Vegetable	0.0
Sub-total	**6,932.81**	**1,013.4**	**2,662.0**	**21.5**	**0.53**	**Sub-total**	**18,298.9**
UPPER WEST							
Formal	**194.5**	0	0	-	**-**	Vegetable	-
						Cereal	0
Informal	711	242.5	0	0	**0.34**	Vegetable	134.6
						Cereals	148.9
Sub-total	**905.5**	**242.5**	**0**	**0**	**0.27**	**Sub-total**	**283.5**
NORTHERN							
Formal	**782.3**	30.8	639.5		**0.86**	Vegetable	1,605.9
					-	Cereal	2,121.9
Informal	**1,147.00**	456	347	0	**0.70**	Legume	8.3
						Vegetable	2678
						Cereal	123.0

Sub-total	**1,929.30**	**486.8**	**986.5**	**0.0**	**-**	**Sub-total**	**6,537.0**
BRONG-AHAFO							
Formal	**311**	63.8	101.2	-	**0.53**	Vegetable	995.7
		-		-		Cereals	172.8
		-	-	-	-	legume	16.8
Informal	2,941.00	0.0	0.0	0	**-**	Vegetable	35
						Cereal	3.5
Sub-total	**3,252.00**	**63.8**	**101.2**	**0.0**	**0.05**	**Sub-total**	**1,223.8**
ASHANTI							
Formal	**335**	87.9	242.1		**0.99**	Vegetable	4,951.7
			-		-	Cereals	508.9
						Legume	27.9
Informal	2,063	600.0	589.3	0	**0.58**	Vegetable	4,899.4
		-	-		**-**	Cereals	854.0
Sub-total	**2,398.00**	**687.9**	**831.4**	**0.0**	**0.63**	**Sub-total**	**11,241.9**
WESTERN							
Formal	**108**	0.0	0.0	-	**-**	Vegetable	0.0
		-	-	-	-	Cereals	0.0
Informal	916	0.0	0.0	0	**-**	Vegetable	0.0
		-	-	-	-	Cereals	0.0
Sub-total	**1,024.00**	**0.00**	**0.00**	**0.00**	**-**	**Sub-total**	**0.0**
EASTERN							
Formal	**2932**			-	**-**	Vegetable	0.0
Informal	3,685	1067.0	556.0	39.3	**0.44**	Cereal	0.0
						Vegetable	1,005
					-	Cereal	4,578.8
Sub-total	**6,617**	**1067.0**	**556.0**	**39.3**	**0.25**	**Sub-total**	**5,583.8**
CENTRAL							
Formal	**134.1**	21.2	30.1	-	**0.38**	Vegetable	124.4
					-	Cereals	14.0
Informal	426	0.0	0.0	0	**-**	Vegetable	0.0
					-	Cereals	0.0

Sub-total	**560.1**	**21.2**	**30.1**	**0.0**	**0.09**	**Sub-total**	**138.4**
VOLTA							
Formal	**1,399.00**	1217.9	1079.1	-	**1.64**	Vegetable	4,218.7
						Cereals	8,517.9
						Legume	28.5
Informal	2,133.00	5323.0	4845.0	5474	**7.33**	Vegetable	37,916.0
		-	-		**-**	Cereals	51,406.6
Sub-total	**3,532.00**	**6540.9**	**5924.1**	**5474.0**	**5.08**	**Sub-total**	**102,059.2**
GT. ACCRA							
Formal	**550.00**	1262.5	2271.0		**6.42**	Vegetable	8,555.8
						Cereals	13,163.1
Informal	1,807.00	2,588.30	618.8	2348.5	**3.07**	legume	28.5
					-	Vegetable	10,724.0
						Cereal	6968.6
Sub-total	**2,357.00**	**3850.8**	**2889.8**	**2348.5**	**3.86**	**Sub-total**	**39,440.0**
Total Formal Area	**10,687.90**	**3,543.0**	**5,824.9**	**-**	**0.88**	***Vegetables***	***22,541.5***
						Cereals	***31,977.6***
Total Informal Area	**18,819.81**	**10,431.3**	**8,156.1**	**7,883.3**	**1.41**	***Legumes***	***126.9***
						Vegetable	***66,104.0***
						Cereals	***64,084.9***
TOTAL	***29,507.71***	***13,974.3***	***13,981.0***	***7,883.3***	**1.21**	***Total***	***184,835.0***
						Vegetable	**88,645.5**
						Cereal	**96062.5**
		35,838.6				**Legumes**	**126.9**

Appendix Five

Number of agricultural information centres operational (e.g. Technical information)

Region	2012				2013				2014			
	New centres established	Total existing centres	Total operational	Total number of Visits	New centres established	Total existing centres	Total operational	Total number of Beneficiaries	New centres established	Total existing centres	Total operational	Total number of Beneficiaries
Ashanti	0	11	11	721	1	11	12	963	0	10	10	3700
Brong-Ahafo	0	2	2	159	0	6	3	180	0	2	1	653
Central	1	4	3	980	0	3	2	281	0	3	2	475
Eastern	0	3	3	900	0	3	3	201	0	3	3	405
Greater Accra	0	0	0	0	0	0	0	0	0	0	0	0
Northern	1	23	23	28361	1	22	23	23486	0	22	22	49,939
Upper East	0	2	1	15000	0	2	2	15000	0	2	1	15000
Upper West	0	2	1	2050	0	2	2	2500	0	1	1	3,250
Volta	0	4	4	13267	0	4	4	8115	0	4	3	7267
Western	0	1	1	14000	0	1	1	18000	0	1	1	22000
Total	**2**	**48**	**46**	**75438**	**2**	**46**	**47**	**36,011**	**0**	**48**	**44**	**102,689**

Source: RAD and DAD

Appendix Six

Farm Mechanization Centres

Region	Number of farm mechanization centres operational											
	2012				2013				2014			
	New centres established	Total existing centres	Total operational	Total area serviced by centre (ploughed-ha)	New centres established	Total existing centres	Total operational	Total area serviced by centre (ploughed-ha)	New centres established	Total existing centres	Total operational	Total area serviced by centre (ploughed-ha)
Ashanti	0	2	2	1,712	0	2	2	1,876	0	5	6	1,882
Brong-Ahafo	1	3	3	1,982	1	2	3	2,152	0	13	12	4,376
Central	0	2	2	30	0	1	1	36	0	4	5	450
Eastern	0	10	10	1,513	0	8	8	1,331	0	10	4	830
Greater Accra	0	3	0	0	0	3	3	14,500	0	3	4	314
Northern	2	11	8	290	0	10	8	300	0	28	27	30,150
Upper East	2	6	8	16,472	0	8	8	21,200	0	7	7	7,450
Upper West	0	15	15	13,000	10	25	25	13,420	0	9	9	8,550
Volta	0	2	2	422	0	3	3	6,420	0	9	7	985
Western	0	1	1	-	0	1	1	0	0	1	1	170
Total	4	52	48	**33,439**	10	61	59	**59,083**	0	89	82	**55,157**

Source: RAD and DAD

Appendix Seven

Availability of Information Services

	NUMBER OF INFORMATION CENTRES OPERATIONAL (e.g. Market Demand, Prices, etc.)											
	2012				2013				2014			
Region	**New centres establi-shed**	**Total existing centres**	**Total oper a-tional**	**Total number of beneficiaries**	**New centres established**	**Total existing centres**	**Total operational**	**Total number of beneficiaries**	**New centres established**	**Total exis-ting centres**	**Total operational**	**Total number of beneficiaries**
Ashanti	1	1	6	1,040	4	6	6	413	1	6	6	2,768
Bono Ahafo	-	12	12	12,362	-	2	2	388	-	12	12	12,362
Central	-	16	14	6,626	-	14	13	6,636	-	17	16	8,713
Eastern	-	3	3	897	-	3	3	658	-	3	2	301
Greater Accra	-	-	-	-	-	-	-	-	-	-	-	-
Northern	-	1	1	23,486	-	1	1	23,486	-	-	-	-

Upper East	-	2	1	5	-	2	1	5	-	-	-	-
Upper West	-	-	-	-	-	-	-	-	-	-	-	-
Volta	1	1	1	580	1	2	2	556	1	1	1	580
Western	-	1	1	4,592	-	1	1	3,921	-	1	1	2,911
Total	2	37	39	49,588	5	31	29	36,063	2	40	38	27,635

Source: RADU and DADU

Appendix Eight

Proportion of Cropped Area per Main Food Crop

Commodity	Area cropped 2008 (ha)	Percentage of Area cropped 2008 (%)	Average area Cropped 2009-2011 (Mt)	Percentage of total area Cropped 2009-2011 (%)	Area cropped 2012 (ha)	Percentage of Area cropped 2012 (%)	Area cropped 2013 (ha)	Percentage of Area cropped 2013(%)	*Area cropped 2014 (ha)	Percentage of Area cropped 2014 (%)
Maize	846,258	22.49%	989,759	24.62%	1,042,083	25.65%	1,023,459	25.38%	1,018,936	24.89%
Rice (Milled)	132,795	3.53%	180,356	4.49%	189,420	4.66%	215,905	5.35%	224,457	5.48%
Millet	182,231	4.84%	180,659	4.49%	172,470	4.25%	160,737	3.99%	162,346	3.97%
Sorghum	275,857	7.33%	254,416	6.33%	230,841	5.68%	225,819	5.60%	226,919	5.54%
Cassava	839,922	22.33%	883,392	21.97%	868,550	21.38%	875,185	21.70%	888,613	21.71%
Yam	347,566	9.24%	389,160	9.68%	426,343	10.49%	421,583	10.46%	428,012	10.46%
Cocoyam	251,852	6.69%	211,425	5.26%	196,328	4.83%	193,998	4.81%	200,402	4.90%
Plantain	311,814	8.29%	329,778	8.20%	337,293	8.30%	339,906	8.43%	356,588	8.71%
Groundnut	350,656	9.32%	350,902	8.73%	345,186	8.50%	328,940	8.16%	334,294	8.17%
Cowpea	161,270	4.29%	170,635	4.24%	168,806	4.16%	161,966	4.02%	165,715	4.05%
Soybean	61,824	1.64%	79,803	1.99%	85,200	2.10%	84,774	2.10%	86,867	2.12%
TOTAL	**3,762,044**	**100.00%**	**4,020,285**	**100.00%**	**4,062,521**	**100.00%**	**4,032,272**	**100.00%**	**4,093,149**	**100.00%**

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Appendix Nine

Proportion of Total Production per Main Food Crop										
Commodity	**Production 2008 (Mt)**	**Percentage Production 2008 (%)**	**Average food production 2009-2011 (Mt)**	**Percentage of Average food production 2009-2011 (%)**	**Production 2012 (Mt)**	**Percentage Production 2012 (%)**	**Production 2013 (Mt)**	**Percentage Production 2013(%)**	**Production 2014 (Mt)***	**Percentage Production 2014 (%)**
Maize	1,470,076	6.08%	1,725,090	6.26%	1,949,897	6.59%	1,764,477	5.60%	1,761,834	5.46%
Rice (Milled)	181,153	0.75%	285,330	1.03%	312,656	1.06%	569,524	1.81%	604,041	1.87%
Millet	193,835	0.80%	216,141	0.78%	179,684	0.61%	155,131	0.49%	155,319	0.48%
Sorghum	330,950	1.37%	320,680	1.16%	279,983	0.95%	256,736	0.82%	259,000	0.80%
Cassava	11,351,095	46.96%	13,335,195	48.36%	14,547,279	49.17%	15,989,940	50.77%	16,523,661	51.19%
Yam	4,894,848	20.25%	5,864,491	21.27%	6,638,867	22.44%	7,074,575	22.46%	7,118,890	22.06%
Cocoyam	1,688,334	6.98%	1,386,135	5.03%	1,270,266	4.29%	1,261,473	4.01%	1,298,973	4.02%
Plantain	3,337,690	13.81%	3,573,356	12.96%	3,556,524	12.02%	3,675,295	11.67%	3,785,891	11.73%
Groundnut	470,099	1.94%	507,343	1.84%	475,056	1.61%	408,814	1.30%	426,281	1.32%
Cowpea	179,681	0.74%	220,255	0.80%	223,253	0.75%	200,404	0.64%	201,146	0.62%
Soybean	74,794	0.31%	140,682	0.51%	151,709	0.51%	138,673	0.44%	141,469	0.44%
TOTAL	**24,172,554**	**100.00%**	**27,574,698**	**100.00%**	**29,585,175**	**100.00%**	**31,495,042**	**100.00%**	**32,276,505**	**100.00%**

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Appendix Ten

Average Farm Input (Gh Cedis) Prices (2008-2014)

COMMODITY	UNIT OF SALE	2008	2009	2010	2011	2012	2013	*2014
ACTELIC	1LITRE	13.33	11.58	12.72	13.04	12.28	17.35	14.50
ATRAZINE	1LITRE	7.23	7.99	8.05	7.53	7.81	9.34	12.82
CHAMPION	1LITRE		8.21	6.72	7.21	7.72	7.66	10.03
DUSBAN	1LITRE	9.80	10.51	13.61	14.63	14.76	15.18	16.55
GALLON 4	1LITRE				34.33	40.50	39.83	27.20
GRAMAZONE	1LITRE	7.55	8.31	7.79	7.35	7.84	8.07	10.30
KARATE	1LITRE	8.32	8.39	8.23	8.58	7.86	8.61	11.73
PAWA	1LITRE		7.84	7.60	7.26	8.07	8.74	10.77
ROUNDUP	1LITRE	9.00	10.52	10.80	9.91	8.95	10.48	13.09
15-15-15	50KG	39.53	43.43	37.50	34.62	41.30	49.93	74.90
20-20-20	50KG	31.89						
SULP.OF AMO.	50KG	30.15	31.73	27.29	27.54	36.24	45.97	60.00
UREA	50KG	37.56	41.44	35.41	32.19	39.38	50.25	64.26
CUTLASS	SINGLE	4.07	4.63	5.63	6.47	7.30	8.33	10.51
HOE	SINGLE	2.46	3.14	3.58	4.06	4.96	5.54	5.82
JUTE SACK	SINGLE	0.99	1.45	1.71	2.12	2.71	2.59	2.99
MATCHET	SINGLE	4.63	5.52	6.74	8.10	8.73	9.33	11.61
POLY SACK	SINGLE	0.72	0.95	0.98	1.13	1.40	1.59	1.85

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Appendix Eleven

National Annual Wholesale Price of Agricultural Commodities (2008-20014, GhȻ)

	Unit of Sale	Standard Weight/Volume(kg or litre)	2008	2009	2010	2011	2012	2013	2014*	% Change (2014/2013)
Maize	Bag	100	27.74	49.30	53.92	49.15	67.29	89.27	110.25	23.50
Millet	Bag	93	63.36	75.42	76.83	84.42	119.98	135.48	157.30	16.11
Sorghum	Bag	109	59.03	71.65	73.51	83.17	108.50	124.85	165.57	32.61
Rice (Local)	Bag	50	43.44	52.17	53.77	59.91	73.03	82.45	116.35	41.11
Rice (Imported)	Bag	50	58.65	67.04	72.38	84.81	108.72	124.59	168.64	35.36
Yam	100 Tubers	250	102.68	121.04	147.43	162.36	217.39	244.34	281.18	15.08
Cocoyam	Bag	91	32.67	37.69	47.86	56.03	76.94	109	129.21	18.97
Cassava	Bag	91	14.97	18.41	21.18	24.50	35.02	48.14	47.04	-2.27
Gari	Bag	68	37.41	49.63	55.77	59.10	80.18	114.57	107.61	-6.07
Cassava Chip	Bag	40	18.90	23.13	28.34	31.60	40.08	n/a	58.92	n/a
Plantain	Average Bunch	9-11	4.24	5.12	6.73	6.68	10.20	13.83	11.34	-18.05
Banana	Average Bunch	6-8	2.64	3.82	4.37	5.12	6.45	7.88	7.27	-7.76
Orange	100 Singles	20	4.81	5.15	7.11	10.43	11.55	12.66	13.96	10.28
Pineapple	100 Singles	150	43.70	58.76	70.20	76.31	90.10	102.65	119.35	16.26
Mango	Crate	100		22.84	29.00	36.99	50.37	72.09	95.38	32.30
Tomato	Crate	52	50.93	86.90	103.55	104.13	132.68	182.29	223.41	22.56
Garden Egg	Bag	27	16.29	23.23	28.11	31.78	37.62	54.34	59.31	9.15
Onion (Local)	Bag	73	29.93	37.98	45.80	50.42	65.72	87.40	278.83	219.04
Ginger	Bag	48	40.72	38.48	51.13	75.34	83.84	86.98	90.31	3.83

Dried Pepper	Bag	16	53.06	150.73	155.81	138.21	174.19	176.32	198.44	12.55
Fresh Pepper	Bag	20			47.16	62.42	75.46	85.73	88.47	3.19
Unshelled Groundnut	Bag	37	32.46	36.68	40.44	54.24	75.01	83.58	94.34	12.88
Groundnut	Bag	82	96.36	118.57	129.65	185.06	262.24	255.15	339.38	33.01
Cowpea	Bag	109	94.74	108.56	117.41	137.99	210.24	219.04	267.76	22.25
Soya Bean	Bag	109		58.13	74.77	101.13	126.55	131.95	197.47	49.66
Groundnut Oil	4 Gallon	18	50.91	67.35	74.42	87.83	115.33	128.13	77.57	-39.46
Palm oil	4 Gallon	18	25.22	26.98	29.87	36.21	41.92	54.03	62.98	16.57
Coconut oil	4 Gallon	18		38.71	38.91	46.59	50.81	54.50	73.98	35.74
Smoked Herring	100 Singles	-	22.01	27.68	30.77	39.61	51.60	65.37	77.38	18.37
Salted Dried Fish	100 Singles	-		48.49	57.78	68.95	87.30	98.06	164.51	67.77
Egg	1 Crate (30 Singles)	-		5.38	6.57	7.05	8.21	9.27	14.74	59.08
Anchovy	Bag	27		74.13	105.32	143.10	146.70	153	144	-5.82
Paddy Rice	Bag	84			59.57	64.85	78.92	130.63	104.50	-20.00

Source: SRID ****provisional***

Appendix Twelve

National Annual Retail Prices of Agricultural Commodities (2008-20014, GhȻ)

	Unit of Sale	2008	2009	2010	2011	2012	2013	2014*	% Change (2014/2013)
Maize	1 Kg	0.54	0.61	0.53	0.72	1.03	1.02	1.31	28.72
Millet	1 Kg	0.71	0.91	0.92	1.02	1.36	1.66	1.93	15.97
Sorghum	1 Kg	0.67	0.88	0.89	0.94	1.25	1.52	1.95	27.98
Rice (Local)	1 Kg	1.07	1.28	1.28	1.47	1.77	2.10	2.78	32.33
Rice (Imported)	1 Kg	1.31	1.54	1.64	2.03	2.44	2.88	3.79	31.83
Yam	1 Kg	0.62	0.67	0.85	0.93	1.22	1.57	1.80	15.11
Cocoyam	1 Kg	0.57	0.63	0.86	1.07	1.42	1.91	1.97	2.88
Cassava	1 Kg	0.29	0.39	0.39	0.45	0.57	0.86	0.82	-4.38
Gari	1 Kg	0.61	0.74	0.86	0.92	1.25	1.94	1.95	0.69
Cassava Chip	1 Kg	0.51	0.64	0.74	0.93	1.08	1.55	12.77	722.21
Plantain	1 Kg	0.57	0.70	1.13	1.15	1.68	1.66	1.65	-0.15
Banana	1 Kg	0.52	0.67	0.88	1.09	1.34	2.85	1.83	-35.88
Orange	1 Kg	0.35	0.46	0.50	0.67	0.76	0.94	6.33	576.22
Pineapple	1 Kg	0.53	0.66	0.81	1.10	1.49	1.49		-100.00
Mango	1 Kg	1.06	1.83	2.14	2.25	2.81	3.96	4.78	20.83
Tomato	1 Kg					1.68	2.40	2.61	8.93
Garden Egg	1 Kg					2.31	4.00	5.31	32.75
Onion (Local)	1 Kg	3.57	8.61	9.42	9.73	11.67	12.83	13.46	4.94
Dried Pepper	1 Kg			3.49	3.91	4.30	5.08	5.98	17.80
Fresh Pepper	1 Kg	1.26	1.54	1.38	2.37	3.20	3.36	4.65	38.20
Groundnut	1 Kg	1.07	1.23	1.28	1.51	2.17	2.47	2.92	18.17
Cowpea	1 Kg	2.08	2.23	2.15	3.10	3.36	3.88	4.75	22.34
Palm oil	1 Litre	1.60	1.85	1.82	2.28	2.5275	3.26	3.91	19.93
Smoked Herring	1 Kg	2.76	3.51	3.96	4.95	5.41	6.09	7.44	22.20
Salted Dried Fish	1 Kg	3.44	4.17	4.13	5.52	6.29	7.82	14.46	84.79
Egg (Commercial)	Single	0.22	0.23	0.45	0.30	0.37	0.46	0.48	2.69

Source: SRID **provisional*