MINISTRY OF
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AFRICAN DEVELOPMENT BANK GROUP
GROUPE DE LA BANQUE AFRICAINE
DE DÉVELOPPEMENT

Savannah Investment Programme (SIP)

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

REVISED REPORT

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ACRONYMS

AfDB	African Development Bank
1D1F	One District One Factory
EA	Environmental Assessment
EC	Environmental Co-ordination
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EPA	Environmental Protection Agency
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
GAP	Good Agricultural Practices
GASIP	Ghana Agriculture Sector Investment Programme
GIDA	Ghana Irrigation Development Authority
GoG	Government of Ghana
GWCL	Ghana Water Company Limited
HIV/AIDS	Human immunodeficiency virus and acquired immune deficiency syndrome
ICOUR	Irrigation Company for Upper Regions
IFC	International Finance Corporation
LI/L.I.	Legislative Instrument
MESTI	Ministry of Environment, Science, Technology and Innovation
MMDAs	Metropolitan, Municipal and District Assemblies
MoFA	Ministry of Food and Agriculture
MoTI	Ministry of Trade and Industry
NSEZ	Northern Savannah Ecological Zone
NEDCo	Northern Electricity Distribution Company
OPs	Operational Policies
PEMP	Provisional Environmental Management Plan
PCT	Project Coordination Team
PFIs	Participating Financial Institutions
PFJ	Planting for Food and Jobs
PHC	Population and Housing Census
PIU	Project Implementation Unit
PNDCL	Provisional National Defence Council Law
PPE	Personal Protective Equipment
RCC	Regional Coordinating Council
RoW	Right of Way
SADA	Savannah Accelerated Development Authority
SEFP	Social and Environmental Focal Point
SIP	Savannah Investment Programme
STDs	Sexually Transmitted Diseases
TA	Technical Assistance
ToR	Terms of Reference

EXECUTIVE SUMMARY

The proposed Savannah Investment Programme will be an instrument to implement the Rearing for Food and Jobs to address key constraints in the livestock industry. The constraints include but not limited to:

- Commercial production of soyabean and maize
- Poultry value chain, and
- Small ruminants value chain.

The SIP will focus on one or more of the six agri-business clusters of the Northern Savannah Ecological Zone (NSEZ). This zone constitutes the poorest part of the country with respect to the national average poverty rate. The zone is characterized with relatively more challenging agro-ecological conditions, low socio-economic indicators and historical neglect in public investments in infrastructure and services. Development of this zone has been discussed as a national imperative for Ghana's balance of payments, macro-economic stability, economic growth, food security, jobs and poverty reduction.

The overall goal of the project is to increase local poultry and small ruminant production, enhance competitiveness of the poultry and small ruminant industry and contribute to improved nutrition security. This will be achieved through increased private sector investment, improved productivity and production of maize, soybean, poultry and small ruminants (goats and sheep).

The project will comprise four (4) main components as follows:

Component 1 - Access to Agriculture Finance: Establish "Missing Middle Financing Vehicle" with Risk Sharing Facility (GIRSAL) to advance term loans to commercial farmers, feed processors, broiler processors. Establish Commercial Poultry Revolving Fund to finance inputs to small-to-medium scale poultry farmers.

Component 2 - Production Development: *Sub-component 1.1 Commercial Production of Maize and Soybean under Conservation Agriculture, Sub-component 1.2 Promotion of Small and Medium Scale Commercial Poultry Production, and Sub-component 1.3 Development of Breeding Stock of Small Ruminants and Local Chicken.*

Component 3 - Agri-Business and Value Chain Development: *Sub-component 2.1 Value Addition and SME Development and Sub-component 2.2 Youth/Women Empowerment and Nutrition*

Component 4 - Project Management and Institutional Support: *Sub-Component 4.1 Knowledge Management, Monitoring and Evaluation, Subcomponent 4.2 Institutional Support and Sub-component 4.3 Project Coordination*

The specific objective of the ESMF among others is to establish clear procedures and methodologies for the environmental and social assessment, for screening, planning, review, approval and implementation of the subprojects to be financed under the programme.

This ESMF has been prepared in accordance with applicable African Development Bank (AfDB) safeguard policies and Ghana environmental assessment guidelines, and which involves the following activities: (i) literature review and data gathering; (ii) Public consultation and discussions with relevant sector

institutions and stakeholders, including non-governmental organizations (NGOs); (iii) environmental screening and potential impacts identification; (iv) identification of impact mitigation; and (v) guidelines for preparation of an Environmental and Social Management Plan for subprojects.

The project will cover the entire savannah areas of Ghana. However, this would be rolled out in phases, starting from the three northern regions in terms of commercial production of maize and soybean. Support to small scale commercial poultry production will include parts of Brong Ahafo region where poultry production is predominant, and would serve as a direct outlet for feedstock. Commercial production of guinea fowls would dominate the northern regions.

It is the policy of the Ministry of Food and Agriculture to reduce the number of project implementation units for easy planning and management. Given closer linkage of existing Savannah Zone Productivity Improvement Program (SAPIP) financed by the Bank, the SIP will have the same implementing entity used for this new program with addition of relevant experts including Investment Officers, Animal Production Specialist and others to be determined during preparation and appraisal.

The National environmental laws, policies and frameworks that set principles concerning the rational use of resources, protection, preservation and conservation of the environment in order to promote the quality of life and sustainable development include the following:

- National Environmental Policy, 2012;
- Environmental Protection Agency (EPA) Act 1994, Act 490;
- Environmental Assessment Regulations 1999, LI 1652;
- Water Resources Commission (WRC) Act 1996, Act 522;
- Water Use Regulation (WUR) 2001, LI 1692;
- The State Lands Act, 1962;
- Lands Commission (LC) Act 2008, Act 767;
- Plants and Fertilizer Act 2010 (Act 803);
- The Labour Act 2003, Act 651;
- Ghana National Fire Service Act 1997 (Act 537);
- The Fire Precaution (Premises) Regulations 2003, LI 1724;
- Control of Bush Fires Law of 1983 (PNDCL 46);
- Control and Prevention of Bushfire law, PNDCL 229;
- Factories, Offices and Shops Act 1970, Act 328; and
- Workmen's Compensation Law 1987.

The environmental and social safeguards issued by AfDB are the bases of the Bank's support for inclusive economic growth and environmental sustainability. The AfDB has developed an Integrated Safeguard System (ISS) in order to better articulate its safeguard policies while improving their clarity, coherence and consistency (AfDB, 2013; AfDB, 2015). The AfDB ISS sets out the basic tenets that guide the approach to environmental safeguards and five Operational Safeguards (OS) were adopted.

The Operational Safeguard (OS) 1 sets out he Bank's overarching requirements for borrowers or clients to identify, assess, and manage the potential environmental and social risks and impacts of the project, including climate change issues. OS 1 requires the preparation of an Environment and Social Management Framework (ESMF), which establishes a mechanism to determine and assess potential environmental and social impacts of any Project. OS from 2 to 5 support the implementation of OS 1 and set out specific

requirements relating to different environmental and social issues, including gender and vulnerability issues that are triggered if the assessment process reveals that the project may present certain risks.

The operational safeguards highlighted in the ISS were considered in the current ESMF associated to the SIP the NSEZ, considering the project potential to trigger some of these safeguards. The SIP is assigned by ESMF as Category 2, which implies that the programme has limited adverse environmental and social impacts and may trigger the following safeguard policies presented below. For Category 2 public and private sector projects, a summary of the ESMF should be made available to the public in Ghana (as the borrowing country), on the Bank's website and the ISTS, and through other appropriate channels of disclosure.

The framework for the Environmental and Social Management Plan (ESMP) provides guidance on procedures to be followed and standards to be met in implementing the SIP which should be in agreement with national and African Development Bank operational safeguard provisions. Institutional arrangements with clearly defined roles and responsibilities as well as monitoring protocols to be followed are presented to ensure that the required provisions are adhered to. Budgetary estimates are provided to support the implementation of the ESMP.

1.0 INTRODUCTION

1.1 Background and Programme Overview

The Savannah Zone holds major agricultural promise that when harnessed will transform the lives of the zone's inhabitants quite significantly, yet the zone constitutes the poorest part of the country with a poverty rate of over 40 % which is about double the national average. The zone is characterized with relatively more challenging agro-ecological conditions, low socio-economic indicators and historical deficit in public investments in infrastructure and services.

The African Development Bank has launched a Feed Africa Strategy that takes a commodity value chain and Agro-Ecological Zones (AEZ) approach with emphasis on commodities that possess comparative advantages and potential for import substitution, future demand, and poverty alleviation. The Bank's new approach to transforming African Agriculture designates increased productivity as number one enabler for transformation.

The Bank engaged with eight Regional Member Countries (RMCs) with vast Savannahs as first phase priority countries for the TAAT-Savannah. Innovation Platforms (IP), an approach where RMC public interventions work together with private sector to facilitate the introduction of multiple factors (adapted seeds, no till agriculture machinery, pesticides, etc) needed to create the conditions through the development of commercial hubs of maize-soybean-livestock production. South American Institutions and the Bank have explored ways of working together to implement the Feed Africa Strategy. In Ghana, the Bank provided financing for land suitability survey and competitiveness analysis of soybean, maize and livestock value chains.

The proposed Savannah Investment Programme will be an instrument to implement the Rearing for Food and Jobs to address key constraints in the livestock industry. The constraints include but not limited to:

a) Commercial Production of Soybean and Maize: Key constraints outlined by stakeholders include (i) land tenure security, (ii) land development, (iii) availability and accessibility of certified seeds, (iv) machinery and mechanisation services, (v) finance, especially term loans (vi) control of pest and diseases including aflatoxin and (vii) aggregation of smallholder fields as part of out-grower scheme, (viii) access to equipment (no-till planters, boom sprayers, harvesters), (ix) storage/warehousing facilities, and (x) activities of commercial farmers, service providers, uncoordinated with no or weak contractual arrangements.

b) Poultry Value Chain**:** Key constraints include (i) low level of support to small scale commercial production of poultry, (ii) access to finance, (iii) unreliability of feed stock (especially soybean), (iv) low level of processing, especially at the small-medium scale, (v) poor access to local supply and food chains due to quality and certification issues, (vi) low support to animal health and husbandry, including accessibility to recommended drugs and (vii) poor cold chain facilities (viii) Poor youth participation

c) Small Ruminants Value Chain: Key constraints include (i) low breeder stock, (ii) poor performance of local breed (iii) lack of quality feed during dry season, (iv) poor animal husbandry and housing, (v)

weak capacity of veterinary services and (vi) poor extension services for animal production (viii) Poor tracking mechanism

The SIP will focus on one or more of the six agri-business clusters of the Northern Savannah Ecological Zone (NSEZ). This zone constitutes the poorest part of the country with respect to the national average poverty rate. The zone is characterized with relatively more challenging agro-ecological conditions, low socio-economic indicators and historical neglect in public investments in infrastructure and services. Development of this zone has been discussed as a national imperative for Ghana's balance of payments, macro-economic stability, economic growth, food security, jobs and poverty reduction.

Consequently, the Government of Ghana (GoG) requested the African Development Bank (AfDB) to consider funding the projects under the agriculture value chain development programme. The project will replicate successful interventions of the Bank and IFAD financed Northern Rural Growth Programme (NRGP) (2016) which closed in December 2016 after 8 years of implementation in same agro-ecological zone. Scalable successful models of NRGP includes establishment of functional local level governance platforms named District Value Chain Committees (DVCCs) and use of a Cashless Credit Systems for Participating Financial Institutions (PFIs) to provide the needed credit for farmers. It will leverage on opportunities in the on-going Bank financed Rural Enterprises Project (REP), Ghana Agriculture Sector Investment Program (GASIP) financed by IFAD, Ghana Commercial Agriculture Project (GCAP) financed by the World Bank and USAID and upcoming projects. It will orchestrate new approaches especially with the management of club goods (warehouses, fodder banks, paddocks, processing centres etc.) using the Corporate Rural Enterprise Model proposed by MoTI, and by linkage inspire other flagship programmes of the Bank particularly the on-going ENABLE Youth Program linked to REP and the up-coming Risk Sharing Facility (RSF) through GIRSAL.

The SIP, Ghana falls under Schedule 2 of the Environmental Assessment Regulations 1999 LI 1652 of the Ghana Environmental Protection Agency (EPA) and Category II of the AfDB Integrated Safeguards System's Operational safeguard requirements and as such requires an ESMF. The ESMF will provide guidance for preparation of the site-specific EIAs/ESMPs which will be prepared during project implementation.

Project Development Goal and Objectives

The overall goal of the project is to increase local poultry and small ruminant production, enhance competitiveness of the poultry and small ruminant industry and contribute to improved nutrition security. This will be achieved through increased private sector investment, improved productivity and production of maize, soybean, poultry and small ruminants (goats and sheep).

Project Components

The project will comprise four (4) main components as follows:

Component 1 - Access to Agriculture Finance: Establish "Missing Middle Financing Vehicle" with Risk Sharing Facility (GIRSAL) to advance term loans to commercial farmers, feed processors, broiler processors. Establish Commercial Poultry Revolving Fund to finance inputs to small-to-medium scale poultry farmers.

Component 2 - Production Development: *Sub-component 1.1 Commercial Production of Maize and Soybean under Conservation Agriculture, Sub-component 1.2 Promotion of Small and Medium Scale*

Commercial Poultry Production, and Sub-component 1.3 Development of Breeding Stock of Small Ruminants and Local Chicken.

Component 3 - Agri-Business and Value Chain Development: *Sub-component 2.1 Value Addition and SME Development and Sub-component 2.2 Youth/Women Empowerment and Nutrition*

Component 4 - Project Management and Institutional Support: *Sub-Component 4.1 Knowledge Management, Monitoring and Evaluation, Subcomponent 4.2 Institutional Support and Sub-component 4.3 Project Coordination*

1.2 ESMF Objectives and Methodology

Environmental and Social Management Framework (ESMF) is the appropriate environmental and social assessment approach for the SIP development at this stage. The ESMF is prepared for AfDB operations that finance multiple, small scale subprojects whose location, scope and designs are not precisely known at the time the Bank appraises and approves the operation. Detailed designs and specific locations of subprojects will be determined only during detailed design and project implementation. The ESMF seeks to establish a process of environmental and social screening which will permit AfDB, MoFA and its implementing agencies to identify, assess and mitigate the environmental and social impacts of the proposed interventions. The ESMF will determine the institutional measures to be taken during the programme implementation, including those relating to capacity building. The ESMF is expected to define the requirements that need to be complied with during project implementation so that all investments financed by the project fully comply with national and international laws (including AfDB's OS requirements). The ESMF will also provide compliance requirements for future project sites which would satisfy requirements of laws (environmental regulations) in force in Ghana and at the AfDB. The environmental and social assessment and AfDB's Operational Safeguard measures will be confirmed during the project implementation phase.

The specific objectives of the ESMF comprise the following:

a) To establish clear procedures and methodologies for the environmental and social assessment, for screening, planning, review, approval and implementation of the subprojects to be financed under the programme;
b) To identify and specify appropriate roles and responsibilities, and outlining the necessary reporting procedures for managing and monitoring of environmental and social risks related to subprojects;
c) To determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF and the site specific ESMPs;
d) To identify and indicate the information resources required for ESMF implementation;
e) Propose measures to improve the potential positive impacts and benefits;
f) Propose measures to mitigate and/or minimize, compensate for potential negative impacts;
g) Establishing project funding required to implement the ESMF requirements; and
h) Providing lessons learned for application to future programs.

The ESMF procedures involve screening and review processes that will determine which safeguard policy is triggered by a particular subproject and what mitigation measures will be required. The screening and review processes will ensure that subprojects with potential significant impacts will further require a detailed study and the need for subproject specific environmental assessment and an ESMP.

This ESMF was prepared in accordance with applicable African Development Bank (AfDB) safeguard policies and Ghana environmental assessment guidelines, and which involves the following activities: (i) literature review and data gathering; (ii) Public consultation and discussions with relevant sector institutions and stakeholders, including non-governmental organizations (NGOs); (iii) environmental screening and potential impacts identification; (iv) identification of impact mitigation; and (v) guidelines for preparation of an Environmental and Social Management Plan for subprojects.

The literature review involved the study of available information and strategic documents both at international and national level on agricultural projects in the Northern Savannah Ecological Zone (NSEZ) of Ghana. These included general environmental management conditions for construction contracts, national environmental laws, regulations, decrees, acts, policies and guidelines; African Development Bank (AfDB) safeguard policies and other relevant documents. References for all literature reviewed has been provided at the end of this document. In addition, the relevant baseline data relating to the biophysical, socio-economic, and socio-cultural characteristics of the environment to be covered by the project, thus, the Savannah zones was assembled and evaluated. The specific baseline data include: climate, air quality and greenhouse gases (GHGs), water resources, soils, biodiversity, materials and energy, animal welfare, economic resilience, investment, vulnerability, local economy, social welfare, way of life/livelihood and equity, safety and human health, and cultural Diversity.

Furthermore, consultations with key stakeholders such as potentially impacted groups, local communities and non-governmental organizations as well as project proponents (governmental institutions and agencies) were held within the Savannah zones. The stakeholders were identified during discussions with the project proponents, that is the Ministry of Food and Agriculture (MoFA). In addition, community and gender meetings were held with potential project affected persons and communities as well as consultations with Metropolitan, Municipal and District Assemblies, and their agencies within the project areas. The viewpoints of the stakeholders have been carefully presented in this document and factored in the assessment and design of project mitigation measures and monitoring plans. The general environmental impact concept of the Ghana Environmental Protection Agency was adopted for this ESMF.

2.0 PROGRAMME DESCRIPTION

2.1 Programme Objectives

The sector goal of the project is to contribute to the end of extreme poverty hunger and malnutrition and improve Ghana's net agricultural trade balance through engendering strategic, competitive agribusinesses around commodity value chains that are endemic NSEZ of the country. The development objective is to assist in transforming selected rural impoverished areas of the country into zones of economic prosperity with attendant benefits of employment and social development. The project objectives are to (a) improve production and productivity of maize, soybean, and (b) create sustainable agribusinesses and corporate rural enterprises and jobs.

These objectives are in line with the Bank's Feed Africa Strategy and PIA on Transforming African Savannahs into Breadbaskets and targeting three (3) of the identified priority agriculture value chains for this ecological zone. It supports the Strategic Objective of the Bank Group CSP for Ghana (2017-2021)-

economic transformation leading to inclusive and sustainable growth and specifically the pillar on Agriculture Enhancing Inclusive Growth and Economic Development. By providing for Corporate Rural Enterprises and also partially supports the second pillar of the CSP Support to Industrialization through Private Sector Development.

As far as the Bank is concerned, the Project will contribute to the five high priorities that are crucial for accelerating Africa's economic transformation: Light up and power Africa; Feed Africa; Industrialize Africa; Integrate Africa; and Improve the quality of life for the people of Africa. It will particularly contribute to the Feed Africa priority which focuses on transformation, scaling up agriculture as a business through value addition, led by private sector and enabled by the public sector, and using innovative mechanisms. It will concentrate on one of the eight identified PIA-Transforming African Savannahs into Breadbaskets and promote three of the 18 identified priority commodity value chains-maize and soybean.

2.2 Programme Design and Key Components

Based on discussions with stakeholders, the project will have three key components (i) Production and Value Chain Development; (ii) Agri-Business Development; and (ii) Project Management, Monitoring and Evaluation. The project will be implemented for a period 5 years, from 2019 to 2024. The initial estimated cost of the project is UA 20 million under African Development Fund (ADF), with possible co-financing under Global Environment Fund (GEF) and Green Climate Funds (GCF). The details of sub-components and activities are in Table 1.

The project will set up a special delivery vehicle with seed money to lend to participating commercial entities. This seed money would be housed in a financial institution to be determined jointly with the Ministry of Food and Agriculture, Ministry of Finance and the Bank of Ghana. The participating financial institution is expected to match the seed money at a ratio of at least 1 to 3. The financial resources from the participating financing institution would be backed by Bank's risk sharing facility (GIRSAL). This is expected to de-risk lending to the agriculture, especially participating commercial farmer requiring loans of 2 to 5 years in tenure.

Small scale commercial poultry production would receive support in the form of inputs (feed stock, day old chicks, vaccines and drugs, seed capital), paid by resources housed in participating financial institutions. This input support is expected to be recovered fully within at least 2 years after production starts. Contractual arrangements with feed millers, poultry producers, processors, supermarkets and food chains would be put in place and supported. A key requirement for accessing support for poultry value chain is ability to own a poultry house that can hold between 1,000 to 5,000 birds per cycle.

The project will contribute towards addressing agricultural productivity and agribusiness development thereby enhancing competitiveness, reducing imports and creating jobs. It is also aligned to the Government's Planting for Food and Jobs Campaign and the One District One Factory Initiative and is technically feasible. SIP supports the ADF objectives to increase food security and reduce poverty. The detail description of the project components is shown in **Table 1** below:

Table 1: Summary of Activities in the Project Components

No	Component Name	Sub-Component and Activities
1	Production and Value Chain Development	<u>Sub-component 1.1 Commercial Production of Maize and Soybean</u> • Increase the production of basic seeds with Savannah Agricultural Research Institute (SARI) • Production and promotion of certified hybrid maize and improved soybean seed, in collaboration with seed companies. • Support to land development services. • Training of producers, pack house operators and exporters on sanitary and phytosanitary (SPS) issue relating to maize and Soybeans • Farmer mobilisation and awareness creation. • Train project staff and farmers on Integrated Crop and Pest Management (ICPM), including biological control options for the management Fall Army Worm (FAW) on Maize and Soybeans. • Conduct surveillance and collect data on pests attacking the Maize and Soybeans in the project zones with specific reference to FAW. • Support to FBOs to improve governance and out grower contractual arrangements • Use of ICT for soil suitability assessment and GIS mapping of farm • promotion of climate smart agriculture, environmental conservation best practices, including use of economic crops such as shea trees as alleys • Support farmers on better seed quality and aflatoxin free materials
		<u>Sub-component 1.2 Small Scale Poultry Value Chain</u> • Input support to small scale poultry farmers (day old chicks, feed stock, vaccines, etc) • Provision of seed capital • Training on animal husbandry • Support to feed millers to improve feed stock
		<u>Sub-component 1.2 Development of Breeder Stock of Small Ruminants</u> • Supply of improved breeding stock • Support to Breeding Stations • Installation of a traceability system and GIS mapping • Capacity building for livestock farmers and extension officers
2	Agri-Business Development	<u>Sub-component 2.1 Agro-Processing and SME Development</u> • Setting up a coordinating company to coordinate services • Promotion of quality standards for maize and soybean production, storage and processing • enhance access to market information (e.g. quantity, quality, timing and pricing) • Support the establishment of small to medium scale poultry processing units • Set up an innovative financing vehicle with GIRSAL to advance term loans to commercial farmers • Support business development, including improvements in business processes of existing commercial farmers

No	Component Name	Sub-Component and Activities
		• Capacity building for women and youth in small-scale commercial poultry business management and entrepreneurship. • Promote the development of allied services (packaging, new distribution networks for poultry products, transport services, new agro-input delivery systems, etc) • Support and training producers on ISO & other necessary certification on poultry to access premium market.
		<u>Sub-component 2.2 Youth/Women Empowerment and Nutrition</u> • Promote other income generating activities for women and youth • Support women and youth to supply poultry products to key institutions and programs including the school feeding program • Promote the consumption of local poultry to improve household nutrition
3	Project Management	<u>Sub-Component 3.1 Knowledge Management, Monitoring and Evaluation</u> • development of annual work plan and budget • establishment of results-based monitoring and evaluation system • conduct Beneficiary Impact Assessment. • Conduct Project Mid-Term Review. • Conduct Project Completion/Technical Review (PCR). • Video documentation of success stories
		<u>Subcomponent 3.2 Institutional Support</u> • Support the coordination and implementation of Rearing for Food and Jobs • Undertake relevant studies, including socio-economic surveys, soil suitability surveys • Support to relevant policy and regulatory reforms, including mechanisation policy • Implementation of ESMP
		<u>Sub-component 3.2 Project Coordination</u>. • Upgrade the project coordination unit with additional staff • Procure PCU vehicles, office equipment and furniture as may be required. • Facilitate production of annual financial audits. • Facilitate production of procurement audit. Facilitate Project Steering Committee (PSC) meetings.

2.3 Project Location and Beneficiaries

The project will cover the entire savannah areas of Ghana. However, this would be rolled out in phases, starting from the three northern regions in terms of commercial production of maize and soybean. Support to small scale commercial poultry production will include parts of Brong Ahafo region where poultry production is predominant, and would serve as a direct outlet for feedstock. Commercial production of guinea fowls would dominate the northern regions.

With respect to the improvements to the breeding stock of small ruminants (sheep and goats), the project will stock eight (9) breeding stations including Pong Tamale, Nungua, Kintampo, Ejura, Babile, Amrahia Dairy, Busa, Dorba and Nkwanta, with improved breeds to be procured from the West African region for multiplication to farmers. Under the RfJ, at least 50 outgrower breeders are to be attached to each of the eight (8) breeding stations, with at least 100 animals to be procured and stocked per outgrower. This program will have an in-built traceability system to track animals as well as good veterinary services. Assessment of the state of the breeding station and accompanied support would be done at preparation.

The primary target under RfJ is youth and women, especially the poultry and small ruminants value chains. The Ministry has a database of small scale poultry farmers with potential for expansion. This would be a primary source in determining project beneficiaries. Detailed assessment of potential project beneficiaries would be done during project preparation.

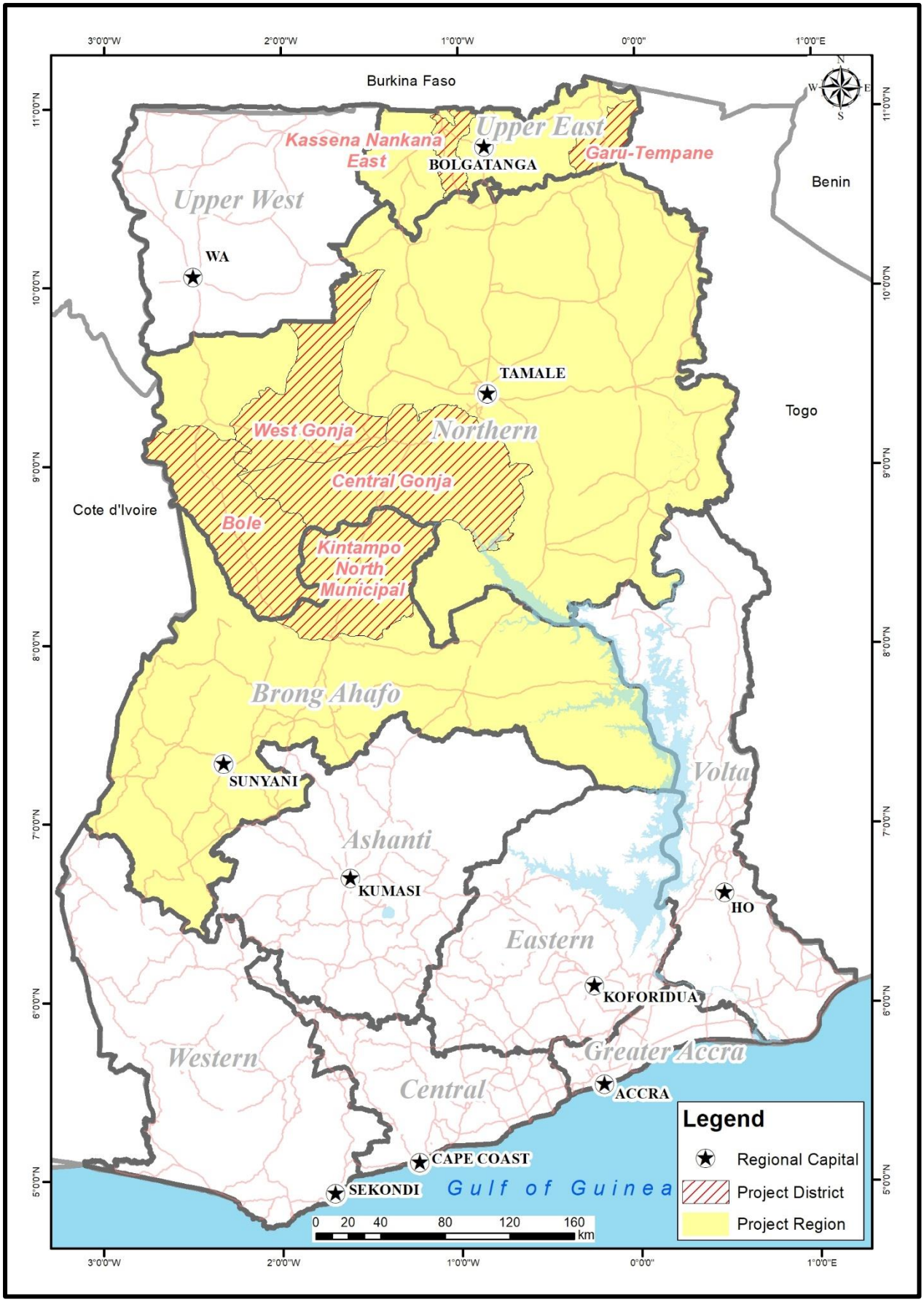

Figure 1: Map of potential SIP project areas

2.4 Institutional Framework and Implementation Arrangement

It is the policy of the Ministry of Food and Agriculture to reduce the number of project implementation units for easy planning and management. Given closer linkage of existing Savannah Zone Productivity Improvement Program (SAPIP) financed by the Bank, the SIP will have the same implementing entity used for this new program with addition of relevant experts including Investment Officers, Animal Production Specialist and others to be determined during preparation and appraisal.

The existing project implementation unit is headed by a Project Coordinator who reports to the Chief Director. The Ministry used a similar arrangement to successfully implement Bank financed projects such as the Northern Rural Growth Program (NRGP), Export Marketing and Quality Awareness Project (EMQAP), and Afram Plains District Agricultural Development Project (APDADP). The Ministry is thus familiar with the Bank's financial management rules, procurement requirements and disbursements procedures. The Mission assessed the existing staff capacity and observed that to be satisfactory, and can be used for the execution of the proposed operation. This is also to minimise project administrative cost.

3.0 ENVIRONMENTAL AND SOCIAL BASELINE

The Republic of Ghana is located between latitudes 5° 36'N and longitudes 0° 10'E. It has a total border of 2,093 km, including 548 km with Burkina Faso to the north, 688 kilometres with Côte d'Ivoire to the west, and 877 km with Togo to the east. It has a coastline on the Gulf of Guinea, part of the Atlantic Ocean, measuring 539 km. It has an area of 239,540 square kilometres. The country is divided into 10 administrative regions and 216 districts.

The Savannah Regions

The Northern Savanna Ecological Zones (NSEZ) form more than half of the total Ghana land surface cover of about 239,000 square kilometres (23.9 million ha). The project area lies between latitudes 8^0 and 11^0 N and longitude 1^0 E and 3^0W. Togo bound it to the east, Burkina Faso to the north, Cote d'Ivoire to the west and the high forest ecological zone to the south. The economy of the northern savanna ecological zone is based mainly on agriculture, which is the basis of livelihood for a majority of the population. The small-scale family holding is the basic unit of production. Most of the project area falls within the Guinea Savanna zone, although activities may extend into a small area of Sudan Savanna in the extreme northeast corner of the country.

The assessment of the potential environmental and social impacts is based on available secondary data and will be evaluated under major areas such as environmental integrity, economic resilience and social welfare. The premise is that environmental integrity and environmental and ecological services form the foundation of human existence, development and sustainability. The ESMF emphasizes resilience and sustainability of the local economy whereby the local economic system can generate wealth, properly remunerate workers, compensate for adverse impacts and deal effectively with disasters and pressures.

On the other hand, social welfare (human well-being) concerns the conditions in which all members of the society can determine and meet their needs and have a large range of choices and opportunities to fulfil their potential without compromising the satisfaction of others and future generations.

3.1 Environmental Integrity

The Savannah zone is characterized with relatively more challenging agro-ecological conditions and as such this section describes environmental conditions in relation to climate, air quality and greenhouse gases (GHG), water resources, soils, biodiversity, energy and materials and welfare of livestock.

3.1.1 Climate, Air Quality and Greenhouse Gases

The three regions fall within the Guinea savannah climatic zone (also known as the Tropical continental or savannah climatic zones). The climate is influenced by the movement of two air masses; Northeast Trade Winds and the Southwest Monsoons. These air masses converge at the inter-Tropical Boundary (ITB) which, depending on the season determines the rainfall pattern over the district. The Guinea and Sudan Savanna zones are both characterized by a unimodal rainfall regime lasting from April to October, although mean annual rainfall is higher in the Guinea Savanna zone (1000-1200 mm), than in the Sudan Savanna (900-1000 mm) The period between November and March is dry and characterized by the

desiccating harmattan winds, rendering the zone prone to bush fires. The mean annual maximum temperature ranges from 33°C to 35°C with a minimum of about 22°C. During the dry season, the harmattan prevails, causing high rate of evapo-transpiration and soil moisture deficiency. Relative humidity is high during the rainy season but falls to about 20 % in the dry season.

Agricultural activities within the zone contribute significantly to the GHG burden through poor farming practices by farmers. Prominent among these activities are deforestation (tree cutting), bush burning and charcoal production.

Figure 2: Mean Annual Rainfall (mm) from 1961-1990 (after Mote, 1998)

3.1.2 Water Resources

The Northern Savannah Ecological Zone is mainly drained by the White Volta and its tributaries Morago, Red Volta, Atankwindi and Asibelika in the Upper East Region, Kulpawn with its tributary, Sisili in the Upper West Region and the Black Volta, Nasia and Oti in the Northern Region. All the principal branches of the Volta flow permanently during the wet periods. In the dry season the volume of water in the rivers of the two upper regions reduce considerably, breaking into pools or drying up at the peak of the dry period. The Volta with its tributaries is an important source of surface water in the Northern Savannah Ecological Zone. Ground water is the most important source of potable water in the project area. However, the yields are in general insufficient to meet the needs of large communities or irrigation agriculture. Water supply thus becomes one of the key demands of the project pilot areas. In all the communities visited, water supply was one of the major concerns raised by the people.

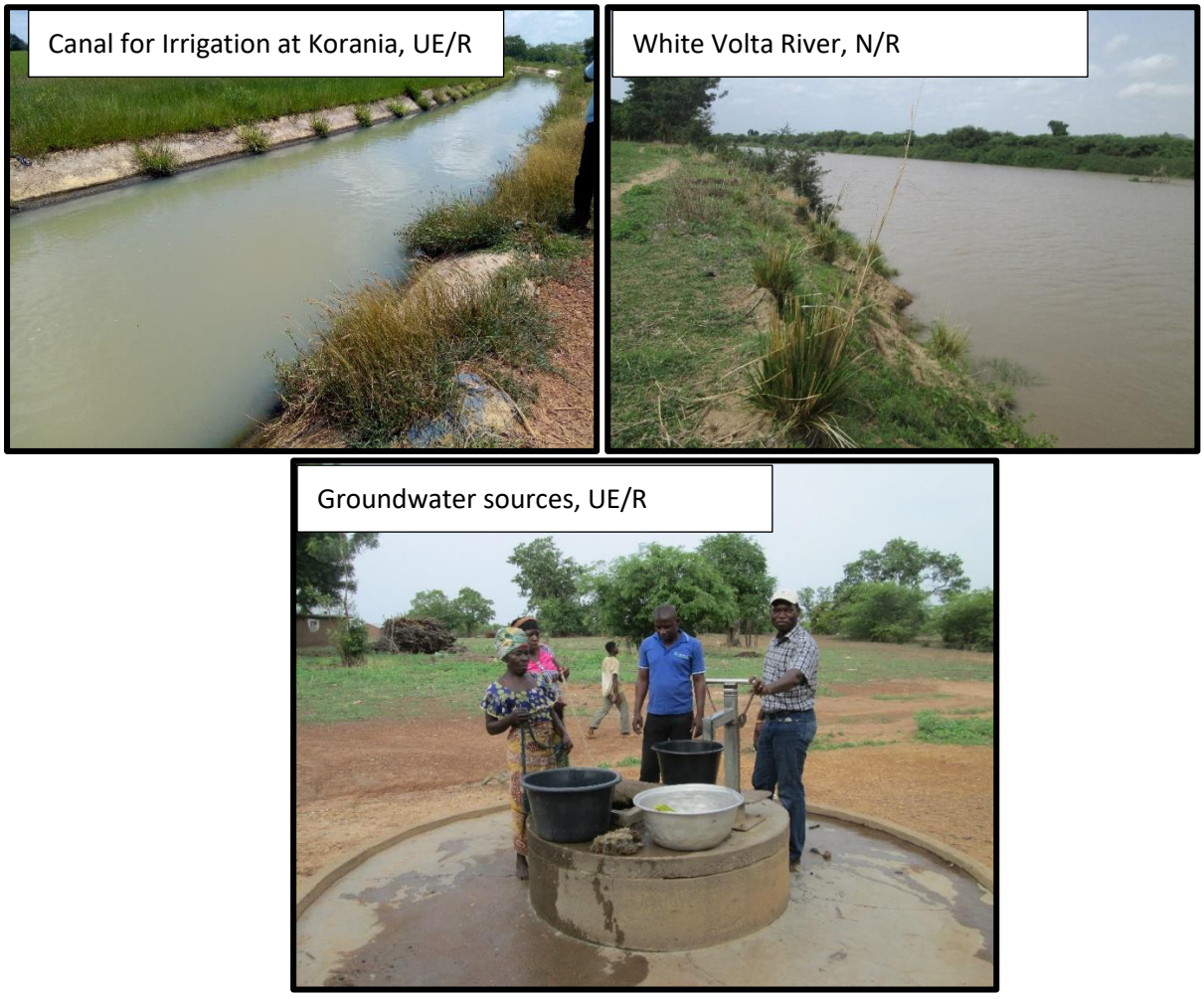

Plate 1: Water Resources in Project Regions

3.1.3 Soils

The most extensive soil type in the study area is the Groundwater Lateritic Soil which covers approximately 75 percent of the area. The principal characteristic of this soil type is the presence of a well cemented layer of iron stone (iron pan) at a relatively shallow depth below the surface. This layer is largely

impervious to infiltrating rainwater resulting in the top soil becoming water logged right up to the surface in the wet season, but dry out completely in the dry season. Soils in the UER and NR are generally formed by weathering of the bedrock although some drift of soil transported by wind and water is also found. The soils have predominantly light textured surface horizons with heavy textured soils confined to valley bottoms. There are extensive areas of shallow concretionary and rocky soils which have low water holding capacities and limited suitability for agriculture.

3.1.4 Biodiversity

The Savannah zone includes the grassland of the north and the derived savannah on the fringes of the forests. The interior savannah contains 1,519 vascular species known to be indigenous or naturalized to the savannah zones of Ghana. Four (4) species including *Ceropegia gemmifera, Commiphora dalzielii, Pteleopsis habeensis* and *Eugenia coronata* are rare in Ghana and internationally. The Guinea Savannah consists generally of fire tolerant, deciduous, broad-leaved trees interspersed in a ground flora of mainly grass, sometimes more than 1.5 m high. The more important grasses of grazing value include *Andropogon gayanus* and in densely populated areas, *Diectomis fastigiata, Pennisetum pedicellatum* and *Loudetia togoensis* are common. Other species that occur are *Heteropogon contortus, Aristida purpurea.* The common trees include *Vitellaria paradoxa* (shea), *Parkia biglobosa* (dawadawa), *Piliostigma thonningii, Combretum glutinosum, Anogeissus latifolia., Detarium sp., Afzelia sp., Prosopis sp., Pterocarpus sp., Antiaris toxicaria., Vitex sp., Piliosstigma sp., Lonchocarpus sp.* and *Acacia sp.*

The Sudan savannah occurs mainly in the Bawku East, Bawku West and Bolgatanga districts at the extreme northeastern corner of the Northern Savannah Zone. Its total coverage is less than 10% of the zone. The vegetation is made up generally of open savannah with short grass interspersed with relatively short low branching deciduous, broad and thin-leave trees. The common trees include species of *Adansonia digitata, Butyrospermum parkii, Acacia sp.* and *Parkia biglobosa.* The vegetation in most of the project area is characterized by a mosaic of forest, savannah, marshes and grassland. The ecology is for the most part severely altered. This is a reflection of prolonged unregulated grazing, burning, and intensive cultivation.

There are 72 forest reserves in the northern savannah made up of 23, 33 and 16 in the Northern, Upper East and Upper West in that order. They range in size from 0.4 square kilometres to 1,116 square kilometres. However, many of these areas are under pressure from subsistence farmers, livestock herders and others who engage in illegal activities in the reserves.

Many of the large wildlife species, which are common to tropical Africa, are also found in Ghana. They live mostly in the savannah ecosystem and include *Panthera leo* (lions), *Panthera pardus* (leopards), *Loxodonta aficana* (elephants), *Syncerus caffer* (buffalo), *Neotrigus pygmaeus* (royal antelope) and *Colobus* and *Cercopithecus sp* (monkeys), *Hippopotamus amphibius* and *Crocodilus sp.* Snakes include pythons and poisonous ones such as *Naja nelanoleuca* (cobra), *Bitis gabonica* (gaboon viper), Lizards, e.g. *Veranus niloticus,* often of striking colours are common, as are large snails, spiders and scorpions which are found in large numbers. The insect fauna is also very rich. The bird species include Francolinus sp (bush fowl) *Falconidae sp* (falcons, hawks, and eagles) Psittacus *erithacus* (grey parrot), *Neophron sp.* (vultures), *Guttera edouardi* (guinea fowl) and many more. Savanna fauna comprises at least 93 mammal species, about half of which can be considered to be large ones, over 350 bird species, 9 amphibians and 33

reptiles. About 13% of the 860 recorded butterfly species in Ghana are associated with the savannah. The Wildlife Conservation Regulations of 1971, (LI. 685) has schedules which contain lists of wild animals found in Ghana. Fifty-five of these are completely protected.

Populations of many wildlife species found in the savannah have dwindled as a result of human-induced interventions, mainly through over hunting, inappropriate agricultural practices and expansion of agricultural land, road construction and bush burning (Appendix IV). The demand for wild animal meat (popularly called bushmeat in Ghana) is ever increasing, resulting in widespread hunting. As human populations in the northern parts of the country increases, exerting enormous pressure on the finite good "land" and creating land hunger among mostly the rural people, intact savanna woodlands and secondary groves which provide wild animals refuge and source of food become fragmented and unable to hold large populations of animals.

Wild animal movement between reserves, groves and sanctuaries in the northern savannah may be limited because these are either fragmented or interspersed with farmlands. Studies have shown that wild animals move from Togo into Ghana and vice versa, using gallery forests along the Red Volta River. It is also on record that wild animals move from the GEF supported Nazinga Game Ranch in Burkina Faso to farms on the Ghana side of the Ghana-Burkina Faso border. Communities outlying protected areas have occasionally had their farms and property destroyed by wild animals mainly elephants that move outside the reserves, particularly in the dry season, in search for water and food. In 1997 elephants invaded some villages including Widinaba, Zongoiri, Nangodi, Sekoti and Datoko, all at the fringes of the Red Volta Forest Reserve, which is a natural trail for elephants moving from Togo into Ghana. Where villages received no help from the staff of Wildlife Division in driving these animals back into the reserves (or gallery forests) they resorted to killing the rampaging animals

3.1.5 Materials and Energy

The main source of energy or fuel for lighting in the Savannah regions is electricity generated by means of hydropower and provided by the Volta River Authority's (VRA) Northern Electricity Distribution Company (NEDCo). The main hydrogenating stations of the VRA are the Akosombo and the Bui Dams. Majority of households in rural areas also use Kerosene lamps while a few communities benefit from solar sources. There are private power generating plants located within the regions. According to NEDCo, most households are unable to pay for the electricity and therefore affects revenue generation and expansion of distribution networks. Most households in the NSEZ rely heavily on wood, charcoal and crop residue for cooking and heating.

3.1.6 Animal Welfare

The livestock sector, including poultry, is an important component of Ghana's agriculture and plays a major role in providing livelihood support to the rural population. Livestock rearing is the second most important agricultural activity after crop farming in the Savannah Zones. The dominant livestock reared in the project are include cattle, goats, sheep, chicken, Guinea fowl and pig. According to the 2010 population and housing census, it is estimated that in the Savannah zones there are about 1,142,180 cattle, 1,690,734 goats, 1,211,809 sheep, 3,017,374 chicken, 1,356,749 guinea fowl and 225,187 pigs.

Donkeys are very common in some parts of the regions, which are used to carry farm produce and goods to and from market places.

Livestock production has been practised over the years on free range systems by households and herdsmen in the project area. These had resulted in animal theft and loss of animals. Livestock watering is another major challenge coupled with lack of animal feed factory in the regions.

A large number of infectious and metabolic livestock diseases prevalent in the region have serious implication for animal productivity, safety and quality of livestock products. The smallholder livestock farmers rely mainly on veterinarians or other animal health workers from the public sector where the fees may be minimal as compared to the private sector practitioners. Those in the rural areas sometimes depend on herbal preparations for mortality risk management. Extension services for animal production are non-existence due to no or inadequate rural extension technicians and veterinary officers. Hence, poor animal health exert significant adverse impacts for the livestock sector.

The regulatory bodies with responsibility for feed and livestock product and by-product quality control and certification are Ghana Standards Authority, Animal Research Institute (located at Nyankpala, Demon-Chegbani and Babile in northern Ghana), Food and Drugs Authority. The Environmental Protection Authority inspects and assesses the appropriateness of feed mills, feed additive manufacturing facilities and Veterinary Services Directorate sees to livestock, livestock product and by-product importation, exportation and quality control.

With respect to aquaculture and fishing, the major rivers such as the Red, Black and White Volta run through the area and their potential for inland fisheries is very significant. This is however not exploited sufficiently due to low technology and the use of simple tools at the artisanal level. There are no specialized fishing-peoples and even canoes and fish-fences are not common on the large rivers. Very often the community will take part on large-scale communal fishing of a specific resource at a particular time of year.

Plate 2: Animal Grazing in the Field (Free range system)

3.2 Economic Activities and Resilience

According to the 2010 population and housing census in Ghana, the Savannah Zone constitute the poorest part of the country with a poverty rate of over 40 % which is about double the national average. This section discusses the investments, the vulnerability of the agricultural sector and livelihoods and the local economy.

The Ghana Living Standards Survey Round Six reports that more than three-quarters of the population 15 years and older is economically active (77.1 %). The survey results show that about 79.8 % of males are economically active while females form about 74.9 %. Of the population 15 years and older are about 75.0 % are employed, with majority of them engaged in Agriculture (44.7 %) and Services (40.9 %). Nearly two-thirds (68.7 %) of the working population are own account workers (46.4 %) and contributing family workers (22.3 %).

3.2.1 Employment

The results of GLSS6 indicates that the activity rate of the population aged 25 to 44 years (93.6 %) is higher than that of any other age group. As expected, the younger population (5-14 years) has a lower activity rate (24.7 %) compared to other age groups irrespective of sex and locality of residence.

Of the population 15 years and older, about 75.5 % are employed and 1.7 % unemployed. For every five (5) persons living in rural areas, about four (4) are employed (81.7 %) compared to 69.9 % in urban areas. The activity rate of the population is 60 %. The rate is slightly higher for males (61.0 %) than females (59.2 %). The unemployment rate for the population who have no job but are potentially available work is 5.2 % and the rate is higher for females (5.5 %) than males (4.8 %). Unemployment is higher in urban (6.5 %) than in rural (3.9 %) areas.

Only one-fifth of the employed population 15 years and older (20.2 %) are in wage employment. Almost one-quarter (24.7 %) are self-employed in the agricultural sector without employees while 18.9 % are contributing family workers in the same sector. These may be persons who are engaged in agricultural activities of household members without an income.

The current activity rate by sex and age group in rural savannah zone and that of the country is shown in **Table 2**. The activity rates of the population residing in rural areas, especially those in the savannah zones (about two-thirds) are higher than the activity rates of urban dwellers (55.1 %). This is also true for both males and females. For rural savannah zone, the current activity rate for all age groups is 67.7 % and for the population, 5-14 , 15-24, 25-44, 45-64, and 65 years and older are 38.7 %, 72.6 %, 92.5 %, 89.4 %, and 68.0 %, respectively.

Table 2: Current activity rate by sex and age group in rural savannah zone and Ghana.

Age Group	Savannah Zone			Ghana		
	Male	Female	Total	Male	Female	Total
5-14	39.8	37.5	**38.7**	24.9	24.5	**24.7**
15-24	73.4	71.8	**72.6**	54.3	50.6	**52.3**
25-44	94.0	91.3	**92.5**	93.6	86.9	**89.9**
45-64	91.4	87.6	**89.4**	92.0	87.3	**89.5**
65+	76.9	57.9	**68.0**	64.2	51.1	**56.9**
Total	**68.1**	**67.3**	**67.7**	**61.0**	**59.2**	**60.0**

Source: Ghana Living Standards Survey Round Six (GLSS6), 2012/2013

According to the GLSS6, of the population 15 years and older in rural savannah areas, the proportion of current employees is (10.2 %) while contributing family workers (32.5 %) form the second largest category of workers after own account workers (52.0 %). However, the proportion of contributing family workers (32.5 %) is relatively much lower than other parts of the country. In the rural savannah areas, the proportion of males who are own account workers is higher than for females (55.9 % and 48.3 % respectively).

With regard to unemployment, the results of GLSS6 indicate that the unemployment rate for persons aged 15 years and older is 5.2 %; the rate is higher for females (5.5 %) than for males (4.8%). The unemployment

rate is highest among the 15 to 25 year group (10.9 %) for both sexes. The unemployment rate for the rural savannah is (3.9%).

3.2.2 Electricity

According to the GLSS6, electricity (mains) is the main source of lighting in Ghana and is accessed by seven in ten households (70.6 %). Meanwhile, the proportion of households in rural savannah with electricity as the main source of lighting is (29.3 %). Apart from electricity, 45 % of rural households use torchlight as the main source of lighting with the rural savannah area (65.7 %) having the highest proportion in the country.

Solar energy is also used as a source of lighting by very few households, with rural savannah having the highest proportion (1.2 %) compared to other areas. Almost three-quarters (74.8 %) of households in rural areas are using wood as the main source of fuel for cooking, while 16.5 % are using charcoal. The use of wood as cooking fuel is most predominant in rural savannah (87.4 %). Only 1.3 percent of rural savannah households use gas.

3.2.3 Water and Sanitation

The results of the GLSS6 indicates that nearly one-third (32.3 %) of households in the country have their main source of drinking water from a well, while 28.9 % have pipe-borne water as their source of drinking water. Nearly thirty percent (26.7 %) use other sources of water (including protected spring, bottled water, sachet water and tanker supply) of which sachet water (28.0 %) constitutes the largest proportion. In the case of pipe-borne water, most households (12.5 %) use a public tap or standpipe.
Nearly three-quarters (73.9 %) of households in rural areas use either a well (55.3 %) or natural sources (18.6 %) as their main source of drinking water. The data further indicates that in rural savannah, almost two-thirds (64.5 %) of households rely on a well as their main source of water for drinking (**See Table 3**). With regard to general water use, about one-quarter of households (26.0 %) use water from natural sources.

Table 3: Households by main source of water supply for drinking in Rural Savannah Zone and Ghana (%)

Source of water supply	Savannah Zone	Ghana
Pipe-borne	**12.5**	**28.9**
Pipe-borne inside dwelling	1.3	5.3
Pipe-borne outside dwelling but not on compound	1.4	3.7
Pipe-borne outside dwelling but from neighbour's house	3.5	7.4
Public tap/Standpipe	6.3	12.5
Well	**64.5**	**32.3**
Bore-hole/Pump/Tube well	58.6	26.7
Protected well	1.5	3.4
Unprotected well	4.4	2.2
Natural sources	20.9	9.0
River/Stream	14.6	6.9
Rain water	0.1	0.4
Dugout/Pond/Lake/Dam/Canal	6.2	1.7
Others	**2.2**	**29.8**
Protected spring	-	0.2
Bottled water	-	0.4
Sachet water	0.9	28.0
Tanker supply/Vendor provided	0.7	0.4
Unprotected spring	0.2	0.7
Other	0.4	0.1
All	**100.0**	**100.0**

Source: Ghana Living Standards Survey Round Six (GLSS6), 2012/2013

With regard to access to sanitation facilities and types of facilities used by households in Rural Savannah, the public toilet is the commonest form of toilet facilities. In the rural areas, about a third of households have no toilet facilities (32.9 %) or use the public toilet (32.1 %). However, when examined independently, it is observed that more than 70 percent (72.6 %) of households in the rural savannah area have no toilet facilities. Clearly, this has implications for the health and well-being of the people living in the area. The types of toilet used by households in Rural Savannah by percent are no facilities (bush/field) (72.6 %), water closet (WC) (0.8 %), pit latrine (8.7 %), KVIP (3.6 %), Bucket/pan (0.0 %), and public toilet (WC, KVIP, Pit, etc.) (14.4 %)

The 2012/2013 GLSS6 survey shows that more than half of households dispose of their rubbish at a public dump (52.4 %) while 12.8 % dispose of them indiscriminately. Less than one-fifth of households (18.2 %) have their rubbish collected. The indiscriminate disposal of rubbish has the potential of the outbreak of diarrheal diseases, including cholera.

With regard to liquid waste disposal, about three-quarters of households (73.7 %) discharge their liquid waste into open areas, with another 22.4 percent discharging it into open drains. Only 1.9 % of households dispose their liquid waste through a septic tank. This again, is a worrying situation that needs to be tackled by agencies entrusted with ensuring good sanitation practices in the country.

3.2.4 Education and Literacy

This section provides information on the levels of educational attainment by the adult population, current school enrolment, adult literacy rates, and training as reported by the GLSS6. According to the GLSS6 (2012/2013), nearly one-fifth of the adult population (19.7 %) in Ghana has never been to school while 44.6 % have attained a level below Middle School Leaving Certificate (MSLC) or Basic Education Certificate Examination (BECE). About 21 % of the population has MSLC/BECE and only 14.7 % have acquired Secondary/Senior Secondary School (SSS) or Senior High School (SHS) or a higher level of education.

The proportion of females who have never been to school (24.3 %) is higher than for males (14.6 %). On the other hand, the proportion of males (22.8%) who have attained MSLC/BECE/Vocational education is higher than the proportion of females (19.3 %). The same pattern is observed at the Secondary/SSS/SHS and higher category where the level of attainment is higher for males (18.0 %) than for females (11.7 %).

The starting age for the first level of formal education in Ghana is six years. Pre-school which comprises nursery and kindergarten starts from three years. **Table 4** shows that the school attendance rate for persons 6-25 years is 93.4 % for males and 90.6 % for females in Ghana and 79.5 % for males and 73.3 % for females in the Savannah Zone. The savannah recorded school attendance rate below 80 %, the lowest rates compared to other zones in the country. The rate is particularly higher among those in the age group 12-15 years, with females recording slightly higher rates than males in the savannah zone.
In addition, the results shows the school attendance for the four regions that make up the Savannah Zone. The Northern region has the lowest rate of 50.4 % while the Upper East, Upper West and Brong Ahafo recorded 63.4 %, 63.6%, and 78.9 %, respectively.

Table 4: School attendance rate by age, locality and sex (%)

Age Group	Regions in Savannah Zone								Savannah Zone		Ghana	
	Northern		Upper East		Upper West		Brong Ahafo		Male	Female	Male	Female
	Male	Female	Male	Female	Male	Female	Male	Female				
6-11	77.6	73.4	92.1	96.0	87.3	89.6	94.7	93.7	80.2	80.1	93.3	92.6
12-15	74.6	73.1	93.1	90.4	88.9	93.2	96.2	95.8	82.7	83.2	95.1	94.7
16-18	78.0	65.4	91.9	92.3	90.3	93.1	94.3	91.5	81.8	76.9	94.2	92.1
19-25	68.6	43.0	85.4	71.5	83.2	73.1	90.2	83.1	73.7	53.2	91.4	84.1
Total	**50.4**		**63.4**		**63.6**		**78.9**		**79.5**	**73.3**	**93.4**	**90.6**

Source: Ghana Living Standards Survey Round Six (GLSS6), 2012/2013

The GLSS6 also compared adult literacy rates by sex and locality and **Table 5** shows that of the Savannah Zone with respect to Ghana. The survey results indicate that the literacy rate of Ghana is 56.3 % while that of the Rural Savannah (Savannah Zone in terms of this project) is 30.0 % (i.e. lowest among other regions). The results further indicate that the lowest literacy rate in English in Ghana is recorded in Rural Savannah (25 %).

Table 5: Adult literacy rates by sex and locality (read and write in English)

Sex	Savannah Zone	Ghana
Male	38.4	67.3
Female	22.4	46.9
Total	**30.0**	**56.3**

Source: Ghana Living Standards Survey Round Six (GLSS6), 2012/2013

3.2.5 Health

The World Health Organization (2012), opine that health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

According to the GLSS6, in Ghana, females are slightly more likely to be sick (15.6 %) than males (13.0 %). The male and female disparities in illness or injury in different localities is not different from the pattern realized for the country. For example, while about one-fifth (20.3 %) of children 0-5 years and persons aged 50 years and older (22.4 %) were reported to have suffered from an injury or illness, the proportion of those who suffered illness or injury was relatively low among the intervening age groups, with the age group 6-19 years being the least affected.

The survey indicates that, the reported rates of illness or injury for females and males in rural savannah were 16.2 % and 14.8 %, respectively. **Table 6** shows the percentage of the population in the Savannah Zone as well as Nationwide who reported illness or injury as per the survey.

Table 6: Percentage of persons who suffer from illness or injury by age group and sex in Rural Savannah (GLSS6, 2012/2013)

Age Group	Savannah Zone			Ghana		
	Male	Female	Total	Male	Female	Total
0-5	22.7	19.6	**21.2**	21.4	19.1	**20.3**
6-19	10.2	11.7	**10.7**	8.4	10.0	**9.2**
20-49	12.7	16.5	**14.8**	11.8	15.6	**13.9**
50+	22.5	23.6	**23.1**	18.5	25.7	**22.4**
Total	**14.8**	**16.2**	**15.5**	**13.0**	**15.6**	**14.3**

Source: Ghana Living Standards Survey Round Six (GLSS6), 2012/2013

In rural savannah zone, 60.6 % of the population patronize public health facilities and underwent medical examination, while 1.8 % and 37.6 % consulted private religious and private non-religious facilities. The percentage of the population in rural savannah zone who underwent medical consultation with different type of health facilities include Hospital (39.7 %), Clinic (17.1 %), MCH Clinic (4.7 %), Maternity Home (0.8 %), Pharmacy (1.6 %), Chemical Store (31.7 %), Consultant's Home(0.5 %), Patient's Home (0.1 %), and other (5.8 %).

Regarding HIV/AIDS, about four (4 %) percent of people in Ghana have no knowledge that a healthy looking person may have the HIV. However, four-fifths of women in Ghana (80.4 % in rural areas and 83.4 % in urban areas) know about mother to child transmission.

Generally, contraceptive use among women in rural savannah is about 19.1 %. With regard to age groups, the use of contraception is highest among the 25-29 year olds (31.6%) and lowest among the 15-19 year olds (6.5%). The survey shows that married women aged 15-49 years who are using a contraceptive method to prevent or delay pregnancy in rural savannah is the lowest (22.6%). Within married women and the age groups, use of contraception is more prevalent among the age groups 20-39 years and lowest in the 15-19 and 45-49 age groups.

3.2.6 Income Levels and Economic Challenges

According to the GLSS6, the major source of household income is from non-farm self-employment, contributing 48.3 % to sources of household income. Wages from employment is the second major contributor to household income (GH¢7,718.10) followed by household agriculture (GH¢3,342.23). Income from rent, remittances and other sources contributes less than 5 percent to household income.

The annual average household expenditure for the country is estimated at GH¢9,317 with a mean annual per capita expenditure of GH¢6,337. The total annual household expenditure for the country is GH₵61,507 million with the share of urban expenditure (65.8 %) almost twice as much as that of rural localities (34.2 %). Moreover, the average household expenditure in urban localities (GH¢11,061) is about 1.5 times that of the rural localities (GH¢7,152).

The household's mean annual per capita expenditure on food (actual and imputed) of GH₵1,302 accounts for the largest share (46.7 %) of the total annual household expenditure of GH₵61.507 million. Household's total expenditure on housing accounts for 12.4 percent of total expenditure with an annual average of GH₵1,156 and an annual per capita expenditure of GH₵395.

The major source of household income is from non-farm self-employment, contributing 48.3 % to sources of household income. Wages from employment is the second major contributor to household income (GH¢7,718.10) followed by household agriculture (GH¢3,342.23). Income from rent, remittances and other sources contributes less than 5 percent to household income.

The survey data again show that 46.4 percent of urban households have savings accounts while in the rural localities only 21.5 % of households have savings accounts. In the rural localities, a relatively higher proportion of males have a savings account (58.6 %) compared to females (41.4 %)

Significant economic disparity exists between the northern and the southern regions of Ghana. In the Savannah Region 10 % of households are food insecure, almost three times the national average, and more than 33 % of children under five have been recorded as stunted. Local governments are limited in their ability to provide public services by long distances between communities, low population density and poor quality of infrastructure. Women in Northern Ghana are especially vulnerable as they face gender inequalities that restrict their full participation in the country's development, including limited access to and control over resources, access to education and services, and participation in decision making.

The Agricultural sector in the Savannah Zones is the basis of the local economy for majority of households and the population as a whole. The area is characterized by predominantly peasant labour intensive agricultural economy. According to the 2010 population and housing census, most of the population dwell in rural areas and practice subsistence and small-scale crop and livestock production. The local economy is marked by low socio-economic indicators and historical neglect in public investments in infrastructure and services, which encouraged migration of the working population to the southern parts of Ghana.

Farming activities in the zones are developed mainly by individual households on family farms, constituting over 90 % of the agricultural activity. Farming is done on smallholder basis usually on farmlands less than 2 hectares and using traditional farming practices that further impoverish soil fertility. Even where households have more farmlands, they are scattered making farming very unattractive.

3.2.7 Vulnerability

The farming system and the agriculture sector as a whole within the Savannah Zones is influenced by several positive and negative drivers such as the following:

a). Negative Factors:
- Lack of technology and human resources;
- Absence of value chain processing industry;
- Uni-modal pattern of rainfall;
- Climate change and climate variability;
- Poor soil fertility;
- constraint is accessing the available water resources;
- Low quality service level at all sectors.
- Market access; and
- Poor access roads;

b). Positive Factors
- Availability of Rivers and water bodies;
- Availability of vast Land and valleys;
- Existence of well adapted livestock; and
- Trade with neighbouring west African countries;

The absence of technology in terms of agricultural machinery and equipment, agro-processing, low human resource capacity and training increases vulnerability of the sector. The impact is much felt through post-harvest losses experienced by farmer, where various perishable agricultural products are unable to reach market places on time due to poor access roads.

The Savannah Zone is a Guinea-Savannah Zone with challenging climatic conditions. There is limited and uncertain rainfall during a single rainy season, droughts and floods, high temperatures and evapo-transpiration, and vulnerability to bushfires. Also, in general, there is low natural soil fertility and water-holding capacity. Climate: The Savannah Zone is characterized by year round warm temperatures and abundant sunshine, which is conducive to production of various crops.

A major constraint is the erratic (and sometimes insufficient) rainfall pattern. Rainfall has a uni-modal pattern, with a wet season from May to September, and a dry season from October to April. Even though rainfall is enough for most annual crops (grains, short-cycle vegetables), most of the Savannah zone is limited to single-cropping, and perennial crop farming is very challenging. Irrigation systems, however, can be developed through the harnessing of surface and ground water, as a complimentary or full management technique. Climate change is an increasing concern for the Savannah Zone, especially if there is less and more erratic rainfall, and higher temperatures. Climatic conditions also have an impact on diseases and pests facing crops, livestock, tree crops; and also humans. In all cases, it is important to address climate change (see Box 6) Soil Quality: In general, soils in the Savannah Zone are suitable for a wide range of land utilization types, including arable farming, forestry and perennial crops. However, constraints of main soil types are low natural fertility, high acidity, sandy topsoil texture, and clay hardpans starting at 20-40 cm depth. These constraints can be mostly overcome by appropriate land use practices in combinations with high input packages (e.g., application of lime, fertilizer packages), and by improved irrigation and land-water management.

Due to the constraint is accessing the available water resources, irrigation schemes operate at only one third of their capacity. There is more than 40 billion m^3 of water in annual, renewable run-off from three major water basins (Black and White Voltas, O River) and several minor (sub) basins (Daka, Nasia, Kulpawn, etc.). To maximize access and use of the water resources for year-round irrigation and power production, there will be a need to build a number of dams, water harvesting structures, ponds and dugouts. There is a need for more knowledge about underground water resources so that a clear understanding of potential and limitations of increased irrigation can be factored into project development. Similarly, a strategy for the protection of the river basins needs to be developed.

The Savannah Zone is blessed with vast lands and valleys, crisscrossed by rivers suitable for commercial agriculture, irrigation, hydropower and water transport which combine to stimulate agro-processing; immense deposits of unexploited minerals suitable for a wide array of industries, including minerals that can support agriculture (e.g., lime). Also, the Savannah Zone is predominantly lowland and flat. Since mechanized (and irrigated) agricultural production prefers flat areas for greater efficiency, the Savannah Zone is therefore very suitable for mechanization. There is a need to capitalize on the enormous irrigation possibilities in the Savannah Zone, which are currently largely untapped. Almost every part of the Savannah Zone is suitable for one type of crop under irrigated conditions. Extensive irrigation schemes all across the zone have the potential to increase suitable agriculture land area by 3 to 4 times. Moreover, irrigation would greatly improve the yields of crops already suitable under rain fed conditions

The agricultural potential of the Savannah Zone, mainly its large-scale irrigation possibilities, is largely untapped. The Savannah Zone with at least 8 million unused or underutilized hectares of agricultural land with highly suitable soils, is open for a massive utilization of the regions land and water resources for largescale irrigated farming, development of modern agro-industry value chains, including vegetable oils, rice, sugar, coon, cassava, shea, high value tree crops and vegetables among others. There are at least USD 2 billion in annual food imports that can be substituted with domestic production, including rice, sugar, chicken meat, and edible oils.

Socio-economically, the advantage of trans-border trade in agro-food products exist for farmers in the regions. The region shares borders with Burkina Faso, Cote d'Ivoire and Togo, which could serve as ready market centres for the agricultural sector. However, farming has been subsistence and has as the main

target consumption, with surplus sold on the market creating value is reduced or nil, due to the absence of processing industry or by the conditions of the existing sales channels among others.

Using the Agro-ecological Zones (AEZ) methodology, developed by the Food and Agriculture Organization of the United Nations (FAO), land suitability analysis for the Savannah Zone was undertaken for 25 crops under rain-fed and irrigated conditions, livestock (suitability for forage legumes, improved pasture–grasses and rangeland), agroforestry and planted forests and commercial pond aquaculture. Irrigation can dramatically transform the agricultural landscape in the Savannah Zone by substantially expanding the area of land suitable for agriculture, and also by increasing yields by shifting from rain-fed to irrigated conditions in selected crops (mainly rice and sugar cane).

Addressing the challenges posed by climate change while increasing the economic attractiveness of agriculture are strategic imperatives for commercial agriculture development in the Savannah Zone. Along with other objectives (such as multi-hazard risk management that is linked to social protection and disaster management), climate-smart agriculture is a key component of erstwhile SADA's vision for sustainable agriculture and agribusiness development enshrined in the Agricultural Masterplan

3.2.8 Investment

The strength, weaknesses, opportunities and Threats (SWOT) analysis of the agriculture sector in the SIP area indicates that the sector is limited in terms of improvement in crops productivity, value chain and agribusiness development and infrastructure development. Regional marginalization with regard to weak involvement of the financial sector and over-centralization of economic and sectoral policies over the years are cited as weaknesses of the agricultural sector.

Owing to these weaknesses and threats, several programmes were initiated in the project area, which include the following:

- Root and Tuber Improvement Programme (RTIMP);
- Northern Rural Growth Programme (NRGP);
- Rural and Agricultural Finance Programme (RAFIP);
- Rural Enterprises Programme (REP); and
- Ghana Agricultural Sector Investment Programme (GASIP).

Root and Tuber Improvement Programme (RTIMP)

The Root and Tuber Improvement and Marketing Programme (RTIMP) is a follow-up to the Root and Tuber Improvement Programme (RTIP) which was implemented from 1999 to 2005. RTIMP was funded by the International Fund for Agricultural Development (IFAD) and the Government of Ghana (GoG) for a period of 8 years (2007-2014). The Goal of the Programme was to enhance income and food security in order to improve livelihoods of the rural poor. The main purpose of the intervention was to build a competitive market-based Root and Tuber Commodity Chain (RTCC) supported by relevant, effective and sustainable services that are available to the rural poor. RTIMP works with a wide cross section of stakeholders in order to achieve maximum economic and social impact at all stages of the R&T commodity chains. The intervention focuses especially on improving the outputs, incomes and hence living standards of small-scale R&T farmers, processors and traders, particularly women.

Northern Rural Growth Programme (NRGP)

The Northern Rural Growth Programme is part of the Government of Ghana's drive to reduce poverty and improve the living conditions of people in the rural areas particularly the northern savannah which is the poorest of the ecological zones in Ghana. It covers the three (3) northern regions and five (5) districts namely Kintampo North, Kintampo South, Pru, Sene and Pru Districts in the Brong Ahafo Region. The Programme is financed by the International Fund for Agricultural Development (IFAD), African Development Bank and the Government of Ghana. Financial Institutions, Beneficiaries and Private Investors are also contributing to the implementation of the Programme. The overall goal of the programme is to contribute to an equitable and sustainable poverty reduction and food security among rural households in Northern Ghana.

Rural and Agricultural Finance Programme (RAFIP)

The main objective of the RAFIP is to offer the opportunity of the rural and agricultural population to have access to sustainable financial services through enhanced outreach, sustainability and linkages. The strategy is to strengthen rural financial systems by providing series of capacity building trainings, including technical training on finance and credit operation as well as management and governance on bank operation, to staff of rural/community banks and microfinance institutions. These also Strengthen linkages between financial and agricultural/agribusiness sectors to promote agribusiness investment.
RAFIP is implemented by the Ministry of Finance and the target beneficiaries include: small farmers, rural entrepreneurs (including women, vulnerable groups and youth), smallholder and farmer organizations, business and trade organizations, community-based organizations, and financial institutions (rural and community banks (RCBs) and rural microfinance institutions (RMFIs)).

Rural Enterprises Programme (REP)

The Rural Enterprises Programme (REP) is part of the efforts of the Government of Ghana to reduce poverty and improve living conditions in the rural areas. REP is an upscale of the Rural Enterprises Project-Phases I & II (REP-II & I) which were implemented in 66 districts across the country from 1995 to 2011. The Programme seeks to upscale and mainstream, within public and private institutional systems, the district-based micro- and small-scale enterprises (MSEs) support system piloted by REP-II & I to at least 216 municipalities and districts in all the ten regions of the country from 2012 to 2020. The Government of Ghana and its development partners perceive the REP model as an effective tool for rural MSE development and poverty reduction.

In July 2010, an Interim Evaluation of the REP-II, undertaken by IFAD's Independent Office of Evaluation, confirmed the relevance, efficiency and effectiveness of the REP model. Subsequently, the Government of Ghana and the funding partners (IFAD and AfDB) decided to convert the experience into a nationwide programme to be known as the Rural Enterprise Programme. Programme Goal. The goal of REP is to improve the livelihoods and incomes of rural poor micro and small entrepreneurs. The development objective is to increase the number of Rural MSEs that generate profit, growth and employment opportunities. The Programme links to the Private Sector Development Strategy Phase II of the Ministry of Trade and Industry, which seeks to increase opportunities for the poor.

It is underpinned by the Government of Ghana Shared Growth and Development Agenda. Programme Implementation Arrangement. The Ministry of Trade and Industry has overall responsibility for the implementation of REP and chairs the Programme's Steering Committee. At the district level, the District Assemblies are the seat of programme implementation and play a central role in coordinating the services, resources and activities of various district level stakeholders in the implementation of REP. A number of implementing agencies play various roles in implementing the interventions of the Programme.

The National Board for Small Scale Industries (NBSSI) is responsible for providing knowledge management, staffing and technical support in the effective delivery of business development services facilitated by Business Advisory Centers (BACs). GRATIS Foundation provides technical backstopping and staffing to the Rural Technology Facilities (RTFs). The Bank of Ghana and ARB Apex Bank will monitor the performance of participating financial institutions (PFIs).

Ghana Agricultural Sector Investment Programme (GASIP).

The Ghana Agriculture Sector Investment Programme (GASIP) aims at providing a framework and institutional basis for a long-term engagement and supplementary financing for scaling up investments in private sector-led pro-poor agricultural value chain development. GASIP contributes to the realization of Ghana's Medium Term Agriculture Sector Investment Programme (METASIP), which provides the road map for the CAADP compact in Ghana. The Ministry of Food and Agriculture (MOFA) will implement GASIP with the aim to promote a "standard setting approach" that will drive its policy, serve as a core investment for value chain development in Ghana, and for aligning parallel financing to complement, following the modalities that each of the Development Partners (DP) prefer. In line with the agreed Strategic Framework for IFAD in Ghana (2012 COSOP), GASIP is built along four (4) strategic axis: (i) linking smallholder farmers to agribusinesses to enhance pro-poor growth; (ii) nationwide scaling up of a successful value chain investment approach; (iii) promoting and mainstreaming climate change resilience approaches in Ghana, in particular in the northern regions, financed through the Adaptation for Smallholder Agriculture Programme (ASAP); and (iv) knowledge management, harmonization of intervention approaches and policy optimization.

USAID has published two publications that identify agribusiness opportunities for international and domestic investors in the Savannah Zone. There are opportunities for large, medium, and small enterprises. The SADA Districts Investment Opportunities (2015) co-published by SADA and USAID provides detailed information for potential investors on the agricultural (and forestry, tourism) potential of each of the 63 districts, and Agribusiness Opportunities in Northern Ghana (2016) which presents 30 commercially viable agribusiness investment and financing opportunities tied to staple crop production in the northern regions. There is a wide range of agricultural value chains that are identified, and opportunities to invest in improving/expanding existing enterprises and facilities and/or new ones. A factory to process and package tomatoes is situated in the projects area as shown in **Plate 3**.

Plate 3: The Pwalugu Tomatoes Factory, Bolgatanga, UE/R

Plate 4: Proposed site for major Inland Port at Buipe in Central Gonja District, N/R

3.3 Socio-Economic Profile

3.3.1 Demographic Characteristics

Population

The estimated household population in Ghana from the GLSS6 (2012/2013) is 26.3 million. The population in rural savannah is 4.7 million with the lowest in the Upper East region (1.1 million). Average household sizes are higher than the national average in the three northern regions (5.5 million for Upper West, 5.4 million for Northern and 4.5 million for Upper East). Household sizes are generally higher in rural (4.5) than urban (3.6) areas in Ghana.

Household Characteristics

The estimated number of households in Ghana is 6.6 million. The mean household size for the country is 4.0 compared to 4.4 obtained from the 2010 Population and Housing Census (**See Table 7**). The mean household sizes higher than the national average of 4.0 are found in the three northern regions (5.5 for Upper West, 5.4 for Northern and 4.5 for Upper East) while the Brong Ahafo region has mean household size of 4.3. Consequently, rural Savannah has the highest mean household size of 5.5, while rural coastal has the least (3.8).

Table 7: Mean household size, estimated population in private households and estimated number of households by region and locality in the Savannah Zone of Ghana.

No.	Region/Locality	2012/2013 Ghana Living Standards Survey Six (GLSS6)		
		Mean Household Size	Population in Households (million)	Estimated number of Households (Thousand)
1.	**Ghana**	**4.0**	**26.3**	**6,601.5**
2.	Northern	5.4	2.6	491.7
3.	Upper East	4.5	1.1	240.3
4.	Upper West	5.5	0.8	137.8
5.	Brong Ahafo	4.3	2.6	614.5

The survey results further indicate that a higher proportion of households are headed by males (69.5 %) than females (30.5 %) (**See Figure 3**). The proportion of male-headed households is highest in rural savannah (83.6 %) but lowest in rural coastal (61.9 %). The proportion of female-headed households is higher in rural coastal (38.1 %) than all other localities, with the least (16.4 %) in rural savannah.

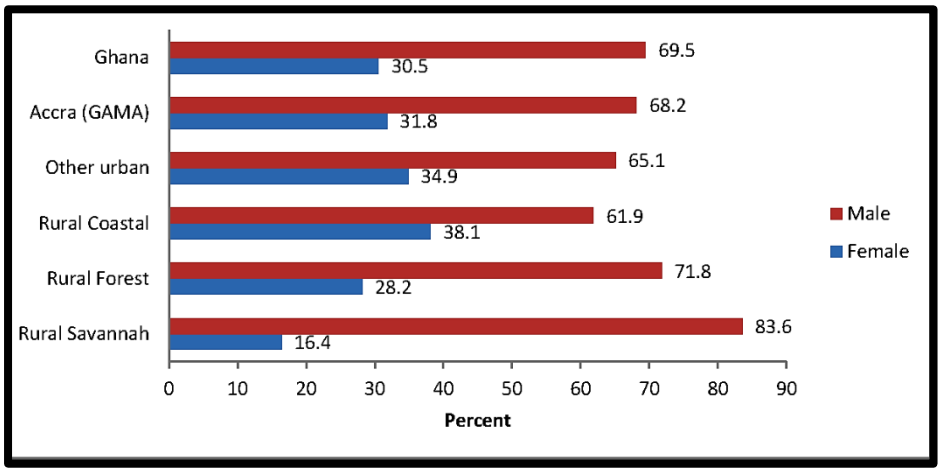

Figure 3: Percentage of household heads by sex and locality (Source: GLSS6, 2012/2013)

The proportion of male headed households (69.5 %) is higher than that of females (30.5 %) and the proportion being much higher in rural savannah (83.6 %) compared to rural coastal (61.9 %). The proportion of female-headed households is higher in rural coastal (38.1 %) than all other localities, with the lowest (16.4 %) in rural savannah. The average age of a household head is 45.1 years with female household heads being older (48.0 years), their male (43.8 years) counterparts.

The mean age at first marriage is 22.6 years, with females marrying about four years earlier than their male counterparts. In rural areas, the mean age at first marriage is 21.9 years compared to 23.3 years in the urban areas.

Fertility Rate

Fertility is the actual reproductive (childbearing) performance of a population while parity is the total number of births a woman has ever had. Considering children ever-born in rural savannah, the Upper East region and Upper West recoded the highest mean parity of 2.49 followed by Northern (2.64) and Brong Ahafo (2.57), respectively. With regard to children surviving, again the Upper East recorded 2.29 followed by Upper West (2.27), Brong Ahafo (2.31) and Northern (2.3).

Mortality Rate

Mortality is generally defined as the number of deaths that occur within a population. In Ghana, the standard crude death rate is 7.7 deaths per 1000 while the unadjusted rate is 6.4 death per 1000. According to the Ghana Statistical Service (GSS, 2014), the adjusted crude death rate of the rural savannah zone comprising the regions, Northern, Upper East, Upper West, and Brong Ahafo are 5.9, 12.3, 10.9, and 7.2, respectively. The survey results indicate that rural death rates are higher in the three regions within the savannah zone with higher male mortality than female mortality. **Table 8** shows the standardized crude death rates (per 1000) by regions in the savannah zone and sex.

Table 8: Standardized crude death rates (per 1000) by regions in the savannah zone and sex

Region	Male	Female
Northern	6.5	5.7
Upper East	14.7	9.4
Upper West	12.3	8.2
Brong Ahafo	8.0	6.3

Source: GSS, 2014

3.3.2 Occupation

The main occupation of currently employed persons 15 years and older by the savannah zone is agriculture. Skilled agricultural or fishery workers constitute the largest occupational group with 44.3 % of all persons 15 years older. This is followed by service or sales workers (24.5 %) and craft and its related workers (12.7 %). These three occupations together engage four out of every five (81.5 %) currently employed persons in the country. While the proportion of males is higher than females in the agricultural or craft related occupations, there is nearly four times the proportion of females (37.2%) than males (10.8 %) in service or sales occupations. As expected, agricultural and fishery occupations are predominant in the region, engaging 70.7 percent of all workers. It is estimated that in the rural savannah zone about 92.9 % of households own and operate a farm.

The GLSS6 estimated that a little over half (51.5 %) of households in Ghana own or operate a farm. Farming is mostly rural, engaging about 83 percent of rural households. Again, in the rural areas, agricultural operators are common in rural savannah with about 93 percent of households involved. The corresponding figures for the forest and rural coastal areas are 81.2 % and 65.4 % respectively. The proportion of females engaged in agriculture in rural coastal (48.7 %) is higher than females in the other

rural areas. Consumption of own products take place mostly in rural households, with an average annual value of GH₵5,004.56 compared to GH₵3,713.62 for urban households.

About 3.7 million households, representing 44.3 5 of households in the country operate non-farm enterprises, while a little over one-third are in rural areas (36.8%). With regard to the non-farm enterprise, the proportion of males engaged in trading activities (32.9%) in the rural areas is higher than females (31.0%). Households spend an average of GH₵110.40 on inputs for operating their enterprises with the highest average expenditure being on raw materials (GH₵641.70), followed by purchase of articles for resale (GH₵387.80) and fuel and lubricants (GH₵316.80).

3.3.3 Way of life/livelihood and Equity

Land tenure in the Savannah Zones like all other parts of Ghana is based on customary law and practice, which governs the acquisition of rights to and transmission and disposition of interest in land. Although there are some differences of detail among the various ethnic groups, there is enough that is common amongst them to enable categorization and characterization into two very broad groups. Customary land tenure is usually managed by a traditional ruler (the "Tindanaa"), earth priest, council of elders, family or lineage heads. Its principles stem from rights established through first clearance of land, conquest or settlement. The first category involves those communities that have centralized political systems with a developed hierarchical order (primarily in the Northern Region). Generally, these state societies have a king or paramount chief at the top and various levels of chiefs and other political office holders under him.

Land tenure among this category of communities recognizes that the allodial title to land is vested in the various skins. However, practical management of the lands is done by the various sub-skins in areas such as Gambaga, Walewale and Langbisi. Although these politically more centralized ethnic groups have "tindanaa" (earth priests), they do not manage the land on behalf of their communities. Their role is limited to the performance of rituals to ensure the productivity of the land. The second category of communities in northern Ghana are the non-state or segmentary societies (mostly located in the Upper East and Upper West Regions) which were organized on the basis of relatively small clan, kinship and family groups and were not knitted into larger political groupings. Therefore, in these regions the "tindanaa" lineage and family headmen are the key players in land matters. Generally, the "tindanaa" appears to have control over the land, particularly vacant communal land. Most agricultural and town lands are, however, in the effective control of lineage and family headmen. Individual rights in appropriated land are quite pronounced and are inheritable and secure. Disputes over farm boundaries, rights in land and trespass on another's land are said to be rare. Land is hardly sold and cannot be sold to a migrant by an individual without informing his head of family and, in some cases, the chief.

The State land system, on the other hand, is usually codified, written statutes and regulations, which outlines what is acceptable and provides consequences for non-compliance. Management of such codified systems is usually in the hands of government administrators and bodies having delegated authority (Lands Commission). The principles under girding this system derive from citizenship, nation building, and constitutional rights. Land rights are allocated and confirmed through the issue of titles or other forms of registration of ownership (Agbosu, *et al*, ISSER 2007: 30). These two systems form the foundation of Ghana's land tenure system.

Meanwhile, the State has the power to compulsorily acquire lands in the public interest by virtue of its power of eminent domain under the Constitution and the State Land Act 1963 (Act 125), Administration of Lands, Act, 1962 (Act 123) and the Lands Commission Act, 2008 (Act 767). These have influence on the livelihoods of many communities.

The land tenure system has significant effect on the livelihoods of people, both in the rural, peri-urban and urban sectors. It is estimated that the livelihoods of over 90% of the population in the region are mainly linked to land and natural resources exploitation. A major effect of tenure on livelihoods is the decline in agricultural production for domestic food and industrial needs. Under the traditional customary land tenure system, each member of the community was guaranteed the right to access land for farming, housing and the enjoyment of other tenurial rights because usually there was sufficient supply of land and access to it did not pose a problem, especially in one's home village (Kasanga, 2002: 28). Therefore, this egalitarian tenurial system sustained the social security of most Ghanaians in the absence of any insurance benefits, as well as providing them with a sense of community. Rural people found solace in the land, which is also the last resort for redundant urban workers. Furthermore, the Ghanaian tenurial system encouraged the free movement of people and thus may be seen as a progressive vehicle for national unity (Kasanga, 2002:29).

A large number of the population in these regions have no access to electricity and gas as fuel for lighting and cooking, especially in the rural areas. Access to water services and sanitation is also limited and not evenly distributed. There are also larger imbalances between those living in rural areas and urban communities with respect to access to transport, education and health.

With respect to gender inclusion and roles, women do not traditionally own land and other natural resources. Women's livelihoods are restricted to the preparation of soil for growing subsistence crops such groundnut, beans, soyabeans, rice and vegetables. Women are also responsible for marketing in small makeshifts tents, on mats at local markets. They are also actively involved in fuelwood and charcoal production in the region. Generally, women do not have access to financial assistance because they do not usually have assets that may be offered as financial collateral. However, women groups are able to receive credits from financial institutions in some cases. The SIP will highlight the involvement of women in the value chain and agribusiness development programmes.

3.3.4 Human Health and Safety

In the Savannah region, the quality of life rests ultimately on the basic conditions which influence health, morbidity and mortality in the population. These factors include the biological make-up of individuals, prevalence and severity of specific diseases, social, economic and environmental conditions as well as the availability, accessibility, affordability and utilization of health care facilities. The safety and human health in the area is further determined by the recurrent floods and droughts regularly devastate communities, infrastructure and livelihoods.

Women are exposed to more dangers concerning safety and health, as a result of the high rate of illiteracy, lack of specialized services (family planning, reproductive health and maternal care) that is reflected in the high rate of early marriages and teenage pregnancy, inadequate access to health care due to lack of health facilities (both hard and soft) and greater vulnerability in access to food and nutritional insecurity. The livestock sector poses potential threat to human health due to lack of veterinary services, quarantine

facilities and conflicts emanating from the activities the settler cattle herdsmen popularly called “Fulani”. The poor health of animals have significant adverse implications for human health.

3.3.5 Cultural Diversity

Members of the same ethnic group share certain beliefs, values and norms that relate to a common cultural background. The majority of the heads of households within the savannah zone are Mole-Dagbani (14.2 %) followed by Ewe (13. 3%) whilst the Mande (1.1%) constitute the smallest ethnic group. The GLSS6 show that the majority of the household heads in Upper East (67.2%), Northern (67.1%) and Upper West (65.0%) are Mole-Dagbani and in Volta, Ewe (71.7%). Most of the household heads that belong to the Gurma ethnic group are located in the Northern (17.9%) and Volta (11.8%) regions.

There is close relationship between family and household formation with regard to the type of socio-cultural practices that are prevalent in a particular society. The family system in any human society, whether it is the nuclear or extended type, depicts the type of kinship ties that hold the people together. Labour in the agriculture sector is influenced by cultural diversity among land owners, commercial famers and settler farmers. The agricultural sector is intrinsically associated with cultural practices, especially, the inland fishing, where in most communities is practised at only specific times by the community as a group. The cultural aspect of people in the Savannah regions play part in the processing and preservation of traditional seeds and some plant species. Most agricultural activities are based on the cultural practices that prevent biotic and climatic hazards and contribute to food security. Cultural practices are further associated with the processing of food such as the sheabutter, cassava flour, starch paste, “dawadawa” among others.

4.0 RELEVANT NATIONAL AND REGIONAL POLICIES AND REGULATORY FRAMEWORKS FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT

This chapter will discuss the Schedule 2 of the Environmental Assessment Regulations 1999 LI 1652 of the Ghana Environmental Protection Agency (EPA), other Ghanaian policies and environmental legislations relevant to the agricultural sector and Category II of the AfDB Integrated Safeguards System's Operational safeguard requirements and as such the guidelines for development of the ESMF.

4.1 Ghanaian Policy and Legal Framework for Environmental Management

The relevant national and sector policies and plans, national legal and institutional frameworks, international conventions and national environmental quality guidelines to guide the implementation of the Agriculture Value Chain Development Project to ensure sustainable development and compliance with national regulations are briefly described in this section.

The 1992 constitution of the Republic of Ghana, is the legal basis for any transaction in the country. This constitution provides the foundation for the national environmental policy through chapter six (6), stating as follows:

i. The state shall take appropriate measures needed to protect and safeguard the national environment for posterity and seek to co-operate with other states and bodies for purposes of protecting the wider international environment for mankind;
ii. The State shall safeguard the health, safety and welfare of all persons in employment, and shall establish the basis for the full deployment of the creative potential of all Ghanaians; and
iii. The State shall encourage the participation of workers in the decision-making process at the work place.

The Environmental Protection Agency (EPA) was established by an Act of Parliament in 1994, Act 1994, Act 490. The EPA has the mandate to implement environmental policy and regulations under the ministry of Environment, Science, Technology and Innovation (MESTI).

The Constitution also includes some provisions to protect the right of individuals to private property, and also sets principles under which citizens may be deprived of their property in the public interest (described in Articles 18 and 20). Article 18 provides that "Every person has the right to own property either alone or in association with others. In Article 20, the Constitution describes the circumstances under which compulsory acquisition of immovable properties in the public interest can be done:
"No property of any description, or interest in, or right over any property shall be compulsorily taken possession of or acquired by the State unless the following conditions are satisfied:

i. The taking of possession or acquisition is necessary in the interest of defence, public safety, public order, public morality, public health, town and country planning or the development or utilization of property in such a manner as to promote the public benefit; and
ii. The necessity for the acquisition is clearly stated and is such as to provide reasonable justification for causing any hardship that may result to any person who has an interest in or right over the property."

Article 20 of the Constitution provides further conditions under which compulsory acquisition may take place: no property "shall be compulsorily taken possession of or acquired by the State" unless it is, amongst other purposes, "to promote the public benefit (Clause 1).

Clause 2 of Article 20 further provides that "Compulsory acquisition of property by the State shall only be made under a law which makes provision for:

i. The prompt payment of fair and adequate compensation; and
ii. A right of access to the High Court by any person who has an interest in or right over the property whether direct or on appeal from any other authority, for the determination of his interest or right and the amount of compensation to which he is entitled."

Clause 3 adds that: "Where a compulsory acquisition or possession of land effected by the State in accordance with clause (1) of this article involves displacement of any inhabitants, the State shall resettle the displaced inhabitants on suitable alternative land with due regard for their economic well-being and social and cultural values."

Environmental Laws and Policy Frameworks

The Environmental laws, policies and frameworks that set principles concerning the rational use of resources, protection, preservation and conservation of the environment in order to promote the quality of life and sustainable development include the following:

- National Environmental Policy, 2012;
- Environmental Protection Agency (EPA) Act 1994, Act 490;
- Environmental Assessment Regulations 1999, LI 1652;
- Water Resources Commission (WRC) Act 1996, Act 522;
- Water Use Regulation (WUR) 2001, LI 1692;
- The State Lands Act, 1962;
- Lands Commission (LC) Act 2008, Act 767;
- Plants and Fertilizer Act 2010 (Act 803);
- The Labour Act 2003, Act 651;
- Ghana National Fire Service Act 1997 (Act 537);
- The Fire Precaution (Premises) Regulations 2003, LI 1724;
- Control of Bush Fires Law of 1983 (PNDCL 46);
- Control and Prevention of Bushfire law, PNDCL 229;
- Factories, Offices and Shops Act 1970, Act 328; and
- Workmen's Compensation Law 1987.

The relevant policies and legal framework are discussed in **Table 9** below:

Table 9: Relevant Ghanaian policies and legal frameworks

No.	Legal Framework and Key Compliance Requirements	Applicability to Proposed Project
1.	**National Environmental Policy, 2012** The main aim of this national policy is to effectively and efficiently exploit, use natural resources and to maintain the environment in a friendly manner not only for the current generation but also for the existence of future generations. Hence, the policy aims to achieve the triple-bottom-line objectives of sustainable development: social, economic, and the environment. Specifically the policy seeks to: • Maintain ecosystem and ecological processes essential for the functioning of the biosphere; • Ensure sound management of natural resources and the environment; • Adequately protect humans, animals and plants, their biological communities and habitats against harmful impacts and destructive practices, and preserve biological diversity; • Guide development in accordance with quality requirements to prevent, reduce, and as far as possible, eliminate pollution nuisances; • Integrate environmental considerations in sectoral structural and socio-economic planning at the national, regional, district and grassroots levels; • Seek common solutions to environmental problems in West Africa, Africa and the world at large. Principles of the National Environmental Policy In order not to deviate from the Policy in the National Environmental Action Plan, 1991, by the then Environmental Protection Council (EPC), this strategic plan take into consideration the following principles that are consistent with the above policy: • Optimum sustainable yield in the use of resources and ecosystems; • Use of most cost effective means to achieve environmental objectives; • Use of incentives in addition to regulatory measures; • Delegation of decision-making and action to the most appropriate level of government; • Polluter pays for the cost of preventing and eliminating pollution and nuisances caused by him/her; • Public participation in environmental decision-making; • International co-operation; • Citizens have the right to safe, healthy environment • All sectors of society are responsible for ensuring a sustainable environment, viz. government, business, industry and the citizenry. The ultimate aim of the Policy is to improve the surroundings, living conditions and the quality of life of the entire citizenry, both present and future. It seeks to promote sustainable development through ensuring a balance between economic development and natural resource conservation. The policy thus makes a high quality environment a key element supporting the country's economic and social development.	The SIP will promote sustainable development by including economic, social and environmental considerations.

No.	Legal Framework and Key Compliance Requirements	Applicability to Proposed Project
2.	**Environmental Protection Agency (EPA) Act 1994, Act 490** The Environmental Protection Agency (EPA) Act 1994 (Act 490) gives mandate to the Agency to ensure compliance of all investments and undertakings with laid down Environmental Assessment (EA) procedures in the planning and execution of development projects, including compliance in respect of existing ones. The Environmental Protection Agency (EPA) Act 490 Section 12 of 1994 confers enforcement and control powers on the EPA to compel existing companies to submit environmental or pollution management plans on their operations as a management tool for effective pollution control. The EPA is the responsible for issuing environmental permits for operations such as this project subject to EPA review. The part two of the EPA Act (Pesticides Control and Management) requires that any person who wishes to use pesticides must register and obtain a license from the Agency.	The implementation of the SIP will be in compliance with the Environmental Assessment (EA) procedures for approval of the EPA. The proposed project will involve the use of pesticides and beneficiary farmers will be required by this Act to register and obtain a license from EPA.
3.	**Environmental Assessment Regulations 1999, LI 1652** The Environmental Assessment Regulations 1999 (LI 1652) enjoins any proponent or person to register an undertaking with the Agency and obtain an Environmental Permit prior to commencement of the project. This regulation allows the EPA to place proposed undertakings at the appropriate level of environmental assessment. The LI 1652 seeks to ensure that development is undertaken in a sustainable environment.	The development of the SIP will be guided by LI 1652 including registering with the EPA and obtaining an environmental permit.
4.	**Water Resources Commission (WRC) Act 1996, Act 522** The Water Resources Commission Act, 1996 (Act 522) establishes and mandates the Water Resources Commission (WRC) as the sole agency responsible for the regulation and management of the utilization of water resources and for the co-ordination of any policy in relation to them. Section 13 prohibits the use of water (divert, dam, store, abstract or use water resources or construct or maintain any works for the use of water resources) without authority. Section 16 empowers the Commission to grant Water Rights (water use permits) to prospective users. The Act states under Section 24 that any person who pollutes or fouls a water resource beyond the level that the EPA may prescribe, commits an offence and is liable on conviction to a fine or a term of imprisonment or both.	The SIP will involve sourcing water from the rivers and dams as well as potential dredging of the dam. The appropriate authorization will be sought from the WRC prior to the commencement of work
5.	**Water Use Regulations 2001, LI 1692** The Water Use Regulations 2001, LI 1692 prohibits the use of water resources without authority from the Water Resources Commission. The Act provides under section 16 for any person to apply to the Commission in writing for the grant of water right. The Regulations also prescribe the raw water charges and processing fees to be paid by prospective water users with respect to the water use permits. The Commission is also mandated to request for evidence that an environmental impact assessment or an environmental management plan has been approved by the EPA before issuance of the Water Use Permit.	Management of the SIP will ensure the continuous renewal of water use permits thorough the appropriate tariff setting and compliance with permit requirements
6.	**The State Lands Act 1963, Act 125** The Act 125 vests the authority to acquire land for the public interest in the President of the Republic. It also gives responsibility for registering a claim on the affected	The land for the SIP will be part of the land acquired by an executive instrument in

No.	Legal Framework and Key Compliance Requirements	Applicability to Proposed Project
	person or group of persons, and provides details of the procedure to do this. The State Lands Act, 1962 provides some details to be taken into consideration when calculating compensation such as definitions for (1) cost of disturbance, (2) market value, (3) replacement value, and so on.	1975, which is a state land. Where individual land is acquired compulsorily, the appropriate compensation will be paid.
7.	**Lands Commission Act 2008, Act 767** The Lands Commission Act 2008 re-establishes the Lands Commission to integrate the operations of public service land institutions in order to secure effective and efficient land administration to provide for related matters. The objectives of the Commission are to: • Promote the judicious use of land by the society and ensure that land use is in accordance with sustainable management principles and the maintenance of a sound eco-system; and • Ensure that land development is effected in conformity with the nation's development goals.	The SIP will be implemented in line with the objectives of the Commission for sustainable development of land and conforms to the development goals of the Savannah zone.
8.	**Plants and Fertilizer Act 2010 (Act 803)** The Act provides for the efficient conduct of plant protection to prevent the introduction and spread of pests and diseases, to regulate imports and exports of plants and planting materials; the regulation and monitoring of the exports, imports and commercial transaction in seeds and related matters; and control and regulation of fertilizer trade.	The Plant Protection Regulatory Services Division (PPRSD) of MoFA will ensure that all seeds/plant materials used in the SIP are safe and also put in monitoring mechanism to prevent the spread of pests and diseases from the project site to other parts of the country.
9.	**Ghana National Fire Service Act 1997 (Act 537)** The Act re-establishes the National Fire Service to provide for the management of undesired fires and to make provision for related matters. The objective of the Service is to prevent and manage undesired fire. For the purpose of achieving its objective; the Service is to organize public fire education programmes to create and sustain awareness of the hazards of fire, heighten the role of the individual in the prevention of fire and provide technical advice for building plans in respect of machinery and structural layouts to facilitate escape from fire, rescue operations and fire management. The GNFS has a rural fire department responsible for the control and management of bushfires.	This act requires the SIP to register with the GNFS who will provide services in the management of all fire outbreaks. The GNFS is mandated to create awareness and sensitization programmes on fire prevention and control.
10.	**The Fire Precaution (Premises) Regulations 2003, LI 1724** The Fire Precaution (Premises) Regulations 2003 (LI 1724) requires all premises intended for use as workplaces to have Fire Certificates and confers enforcement powers on the Ghana National Fire Service (GNFS) to demand a fire certificate for premises that are put to use as a place of work.	The Regulation requires a Fire certificate to be obtained for the operation of the SIP activities
11.	**Control of Bush Fires Law of 1983 (PNDCL 46)**	

No.	Legal Framework and Key Compliance Requirements	Applicability to Proposed Project
	It seeks to control the setting of bush fires by criminalizing the intentional, reckless, or negligent causing of such fires and holding the offender liable for all consequences of the fire.	Bush fire is a risk to the SIP and MoFA and partners will be guided by these Laws to take lawful action against any such offender.
12.	**Control and Prevention of Bushfire law, PNDCL 229** Section 2 defines "starting of a bushfire". A person starts a bushfire if an action of that person results in the uncontrolled burning of a farm, forest or grassland. The Chief Conservator of Forests or the Chief Game and Wildlife Officer may authorize starting of fires by authorized officers in Conservation Areas under section 4.	
13.	**The Labour Act 2003, Act 651** Section 118 (1) of the Labour Act 2003 (Act 651) stipulates that it is the duty of an employer to ensure that every worker employed works under satisfactory, safe and healthy conditions. Act 651 contains a number of specific provisions relating to an employer's duty of care to its workers. These include providing and maintaining "at the workplace, plant and system of work that are safe and without risk to health" and taking "steps to prevent contamination of the workplaces by, and protect the workers from, toxic gases, noxious substances, vapours, dust, fumes, mists and other substances or materials likely to cause risk to safety or health". A worker is required to report situations that he believes may pose "an imminent and serious danger to his or her life, safety or health".	This Act requires the SIP management to ensure the welfare of workers. MoFA/Proponents will be committed to ensure the safety and health of its workers by providing a safe working environment and providing the required apparatus and measures to mitigate impacts.
14.	**Factories, Offices and Shops Act 1970, Act 328** The Factories, Offices and Shops Act of 1970 (Act 328), as amended by the Factories Offices and Shops (Amendment) Law 1983 PNDCL 66, the Factories Offices and Shops (Amendment) Law 1991 PNDCL 275 s.1 (a), and the Ghana National Fire Service Act, 1997 (Act 537) requires all proponents to register every factory/workplace with the Chief Inspector of Factories Inspectorate Division. The Act requires all factories, offices and shops to among others, notify the Chief Inspector of accidents, dangerous occurrences and industrial diseases, post in a prominent position in every factory the prescribed abstract of the act and other notices and documentations, as well as outlines the regulations to safeguard the health and safety of workers.	The Act requires the SIP to be registered with the Factories Inspectorate Division, post the abstract of the act at a prominent place at the premises and notify the Chief Inspector of any accidents, dangerous occurrences and industrial diseases.
15.	**Workmen's Compensation Law 1987** It is to provide for the payment of compensation to workmen for personal injuries caused by accidents arising out and in the course of their employment. The tenets of the law places a large share of the burden of supporting workers injured at the workplace on the shoulders of the employers.	The SIP has potential health and accident risks. The Law enjoins MoFA/Proponents as employers to ensure and be responsible for the safety of its workers and reward compensation to its workers for injuries arising in the course of work in accordance with this Law.

4.2 African Development Bank Safeguards

The African Development Bank Group (AfDB) subscribes to the concept of sustainable development as its benchmark for environmental policy. The concept assuming that the ecological capacity of regeneration and assimilation of natural ecosystems will be kept is defined as (AfDB, 2004): "the acquisition, transformation, distribution, and disposal or resources in a manner capable of sustaining human activities without any reduction in the aggregate natural resource stocks".

Based on the definition provided, the environmental policy framework must consider the need to establish a strong connection between the increase of natural capital (resources), poverty reduction strategies (a strong sustainability perspective) and issues related to the population as a pressure factor in the carrying capacity in natural ecosystems (AfDB, 2004). The Bank's environmental policy has the following general and specific objectives.

General objectives:

- The general improvement in the quality of life of the people of Africa through the support of an environmentally sustainable development; and
- The preservation and increase of ecological capital and life support systems across the continent of Africa.

Specific objectives:

- Increase the carrying capacity of the regional member countries (RMC) through the introduction of innovative technologies, recognized natural and management techniques of reduction of threats to ecosystems;
- Substantially improve the access of disadvantaged/poor environmental resources;
- Help the PMR to acquire capacity to carry out institutional changes in order to achieve sustainable development; and
- Strengthen the partnership with international agencies and network with international, regional and sub-regional organizations for co-ordinate assistance related to the development environmentally sustainable and to promote exchange of information and sharing of the best practices.

The environmental and social safeguards issued by AfDB are the bases of the Bank's support for inclusive economic growth and environmental sustainability. The AfDB has developed an Integrated Safeguard System (ISS) in order to better articulate its safeguard policies while improving their clarity, coherence and consistency (AfDB, 2013; AfDB, 2015). The AfDB ISS sets out the basic tenets that guide the approach to environmental safeguards and five Operational Safeguards (OS) were adopted.

The Operational Safeguard (OS) 1 sets out he Bank's overarching requirements for borrowers or clients to identify, assess, and manage the potential environmental and social risks and impacts of the project, including climate change issues. OS 1 requires the preparation of an Environment and Social Management Framework (ESMF), which establishes a mechanism to determine and assess potential environmental and social impacts of any Project. OS from 2 to 5 support the implementation of OS 1 and set out specific requirements relating to different environmental and social issues, including gender and vulnerability issues that are triggered if the assessment process reveals that the project may present certain risks.

The operational safeguards highlighted in the ISS were considered in the current ESMF associated to the SIP the NSEZ, considering the project potential to trigger some of these safeguards. The SIP is assigned by ESMF as Category 2, which implies that the programme has limited adverse environmental and social impacts and may trigger the following safeguard policies presented below. For Category 2 public and private sector projects, a summary of the ESMF should be made available to the public in Ghana (as the borrowing country), on the Bank's website and the ISTS, and through other appropriate channels of disclosure.

Table 10: Operational Safeguards of the AfDB

No.	*AfDB Operational Safeguard Policy*	*Summary of core requirements*	*Potential for Trigger under proposed project*	*Remarks or recommendation for proposed project*
1.	OS1– Environmental and social assessment	Borrowers or clients are responsible for conducting the environmental and social assessment (Strategic Environmental and Social Assessment, or SESA, or Environmental and Social Impact Assessment, or ESIA) and for developing, as an integral part of project documentation, an appropriate plan for managing possible impacts. It categorises proposed projects into categories 1, 2, 3, 4 and 9 based on the extent of adverse impacts anticipated from the project.	Triggered	OS1 is triggered because SIP will be based on the development of small rural infrastructures and rehabilitation of agriculture infrastructures, which may pose significant environmental and social risks. SIP risks will be managed throughout the implementation of mitigation measures prescribed in the site specific ESMPs. Few of the site specific environmental assessments may be limited to full EIA as per the requirements of the national regulations (eg. rehabilitation activities and irrigation schemes).
2.	OS2– Involuntary resettlement: land acquisition, population displacement and compensation	It relates to Bank-financed projects that cause the involuntary resettlement of people. It seeks to ensure that when people must be displaced they are treated fairly, equitably, and in a socially and culturally sensitive manner; that they receive compensation and resettlement assistance so that their standards of living, income-earning capacity, production levels and overall means of livelihood10 are improved; and that they share in the benefits of	Triggered	This policy requires that both physical and economic displacement are compensated and therefore land tenure security for both commercial and outgrower farmers issues must be considered and will include squatters or encroachers.

No.	*AfDB Operational Safeguard Policy*	*Summary of core requirements*	*Potential for Trigger under proposed project*	*Remarks or recommendation for proposed project*
		the project that involves their resettlement.		
3.	OS3- Biodiversity, renewable resources and ecosystem services	This Operational Safeguard (OS) outlines the requirements for borrowers or clients to (i) identify and implement opportunities to conserve and sustainably use biodiversity and natural habitats, and (ii) observe, implement, and respond to requirements for the conservation and sustainable management of priority ecosystem services	Triggered	OS3 is triggered since the proposed interventions will involve extraction of natural resources including use of water, soils (e.g., plantation forestry, commercial harvesting, agriculture, livestock, fisheries and aquaculture). Some significant flora and faunal species as well as their habitat may be impacted during clearing of vegetation etc.
4.	OS 4–Pollution prevention and control, hazardous materials and resource efficiency	This OS outlines the main pollution prevention and control requirements for borrowers or clients to achieve high quality environmental performance, and efficient and sustainable use of natural resources, over the life of a project. It draws on and aligns Bank operations with existing international conventions and standards related to pollution, hazardous materials and waste, and related issues	Triggered	OS4 is triggered because potential environment and social impact due to emissions of pollutants and waste is anticipated during the construction phase. Likewise, the activities will involve the use of improved application of fertilizers and agro-chemicals, as well as result in the production of agriculture wastes. These will be managed as per measures prescribed in site specific management plans.
5.	OS5–Labour conditions, health and safety	This OS outlines the main requirements for borrowers or clients to protect the rights of workers and provide for their basic needs. When the borrower or client intends to employ a workforce for a project, it develops and implements a human resources policy and procedures appropriate to the nature and size of the project, with the scale of the workforce in alignment with this OS and with applicable national laws. The OS requires the protection of the	Triggered	The Contractor shall comply with the national Labour laws and Best Practice Occupational Health and Safety requirements.

No.	*AfDB Operational Safeguard Policy*	*Summary of core requirements*	*Potential for Trigger under proposed project*	*Remarks or recommendation for proposed project*
		workforce through the institution of appropriate health and safety measures taking into account risks inherent in the particular sector and specific classes of hazards in the borrower's work and does not support the use of child labour and forced labour		

The SIP has been assessed under Category 2 per the Climate Safeguard Screening Systems requiring the implementation of adaptation measures to increase the resilience of communities and the infrastructure to be rehabilitated to withstand the impacts of climate change. a detailed evaluation of the climate risks and possible adaptation measures for all programme activities will be undertaken using the Bank's Adaptation Review and Evaluation Procedures under the Bank's Climate Safeguard System (CSS).

5.0 POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS, CLIMATE CHANGE AND MITIGATION MEASURES

In the absence of detailed project designs, layouts and specific infrastructure locations, the assessment of the potential environmental and social impacts and the preparation of the respective management plans are based on conceptual provisions within the SIP. The programme will have positive and potential negative social, economic and environmental impacts at different levels.

The actual impact significance rating depends on a lot of factors, including:

- the magnitude of the impact;
- the sensitivity and value of the resource or receptor affected;
- compliance with relevant laws, regulations and standards;
- views and concerns of stakeholders;
- overall worker/public comfort; and
- likelihood of occurrence.

5.1 Categories of impact significance

A 'negligible or nil impact' or an impact of negligible significance is where a resource or receptor will not be affected in any way by a particular activity, or the predicted effect is deemed to be imperceptible or is indistinguishable from natural background levels.

A 'minor impact' or an impact of minor significance is one where an effect will be experienced, but the impact magnitude is sufficiently small and well within accepted standards, and/or the receptor is of low sensitivity/value. In such instances, standard construction/ operational practices can address such impacts.

A 'moderate impact' or an impact of moderate significance is where an effect will be within accepted limits and standards. Moderate impacts may cover a broad range, from a threshold below which the impact is minor, up to a level that might be just short of breaching an established (legal) limit. In such cases, standard construction practices can take care of these impacts but mitigation measures may also be required.

A 'major impact' or an impact of major significance is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. In such cases, alternatives are required to address such impacts otherwise mitigation measures should be adopted with strict monitoring protocols.

The above classification is largely subjective, and may be overruled by new site specific issues or information and detailed project activities not captured in this framework.

5.2 Potential Positive Impacts

The significant positive impacts of SIP are outlined as follows:

- A major beneficial impact will be in respect of socio- economic circumstances and will be related to increases in food production, employment opportunities and enhancement of community well- being

and living conditions. New market opportunities and diversification of local economies will amplify these socio-economic impacts. Benefits in terms of a broader range of products and an increase in household diets varieties will be achieved. Technical services to farmers will be enhanced as a result of capacity building activities implemented along the program, thereby increasing the production and productivity of smallholder farmers;

- Good farming practices will engender soil and water conservation and bring environmental benefits. Among them are reduced land degradation and soil losses, improved water resources management (surface and groundwater) and less siltation problems. Also, training on agrochemical usage (fertilizers and pesticides) and proper waste management practices will promote sustainable management of agricultural activities. The anticipated impact is major;
- The implementation of SIP is expected to significantly improve the livelihood of the community through capacity building (training) to ensure implementation of better farming practices. Through consistent engagement of the community especially vulnerable groups, including women, youth and elderly headed households, good procedures will be developed for the benefit of the society in general. On the other hand, the health protection programmes considered in the SIP will ensure a better hygiene and safety of farming communities;
- Small irrigation schemes which are operating in an effective and efficient way, may strengthen community resilience and may also be considered as climate change adaptation measures. In addition, improved early warning systems for drought, use of improved crop varieties and livestock breeds, improved good crop and livestock management practices and diversification of agricultural activities within single farm units are important contributions to the living standards of the people. The impact is major;
- The planned investment will contribute significantly to the reduction of the vulnerability of the agricultural sector in the Savannah Zones. It will decrease the exposure and sensitivity to the existing challenges such as the lack of technology and manufacturing industry and market access and rather enhance the positive aspects (such as cross-border trade). This will be a positive impact, high magnitude, direct, local/regional, permanent and very significant;
- The infrastructural improvement in respect of roads and electricity already captured under SAPIP will be enhanced and further improve the well-being of the rural population and thereby affect other sectors such as education, health and communication. This will be a positive impact, moderate magnitude, indirect, local/regional, permanent and significant; The SIP will improve significantly the quality of life (dependent on the economic sustainability of farms/projects) of rural populations. This will be a positive impact, moderate magnitude, indirect, local/regional, permanent and significant;
- Investment in rural areas will discourage youth migration to urban towns for non- existent jobs. The job creation impacts will be positive, moderate magnitude, indirect, local/regional, permanent and significant.
- With the reduction in migration to urban centres, the pressure on urban infrastructure may become less and probably more sustainable.
- A significant proportion of the measures proposed will directly benefit women. In Ghana, women constitute 52% of the national agricultural labour force, contribute 46% to the total GDP and also produce 70% of subsistence crops (MoFA, 2002). The Project will contribute to the national Gender and Agriculture Strategy through the empowerment programmes. This will be a positive impact, moderate magnitude, direct, local/regional, permanent and significant; and
- In addition, the SIP includes specifically a set of measures which will contribute to a fair distribution of resources and opportunities. These include consideration of gender in relation to the registration of producer groups, support for women's associations and training actions will include sex education,

family planning and literacy. This will be a positive impact, moderate magnitude, direct, local/regional, permanent and significant.

5.3 Potential Negative Impacts

The SIP does not include major construction activities hence not much impacts are expected therefrom. Some specific activities and sub activities which may have environmental and social concerns are listed in the Table below.

Table 11: Sub- project activities and potential environmental and social impact issues/ concerns

Sub- Project activities/interventions	Potential Impact Issues/ concerns			
	Environmental		Social	
	Issue	Significance	issue	Significance
1. Increase the production of basic seeds with Savannah Agricultural Research Institute (SARI) **2.** Production and promotion of certified hybrid maize and improved soybean seed, in collaboration with seed companies. **3.** Support to land development services. **4.** promotion of climate smart agriculture, environmental conservation best practices, including use of economic crops such as shea trees as alleys **5.** Support farmers on better seed quality and aflatoxin free materials **6.** Input support to small scale poultry farmers (day old chicks, feed stock, vaccines, etc)	<u>Biodiversity losses</u> ✓ Fauna and flora losses from project activities and also due to poaching and land conversion in natural resource areas near project sites <u>Deforestation</u> ✓ Extensive agriculture leading to deforestation ✓ Increase in GHG emissions ✓ Bush fire <u>Water resources and pollution</u> ✓ Pollutant discharges from processing of poultry and feed into local water bodies both surface and groundwater ✓ Improper disposal of wastewater ✓ Exposure to agrochemicals including pesticides ✓ Sediment movement into water bodies from poor land clearing practices <u>Vegetation losses, soil disturbance and Erosion</u>	Moderate Moderate Minor Major Moderate Moderate Major Moderate	<u>Land tenure and security issues</u> ✓ Anxiety and concerns from affected persons ✓ Unclear understanding of land use and occupancy ✓ Conflicts in land claims ✓ Land acquisition and compensation issues ✓ Discrimination, lack of grievance mechanisms for land owners and users ✓ Temporary and permanent properties affected by project <u>Maintaining Livelihoods</u> ✓ Community acceptance of improved technologies and approaches ✓ Demand for alternative/ additional sites to carry out trials ✓ Adequate, documented and transparent compensation for affected persons in order to vacate or release land for trials ✓ Disruption of work programs from rehabilitation and upgrading works <u>Security and Safety</u> ✓ Invasion of privacy of host communities and their households	Moderate Moderate Moderate Moderate Moderate Moderate Minor Moderate Minor Moderate

Sub- Project activities/interventions	Potential Impact Issues/ concerns			
	Environmental		Social	
	Issue	Significance	issue	Significance
7. Support to feed millers to improve feed stock **8.** Supply of improved breeding stock **9.** Support to Breeding Stations **10.** Support the establishment of small to medium scale poultry processing units **11.** Support business development, including improvements in business processes of existing commercial farmers **12.** Capacity building for women and youth in small-scale commercial poultry business management and entrepreneurship. **13.** Promote the development of allied services (packaging, new distribution networks for poultry products, transport services, new agro-input delivery systems, etc) **14.** Promote other income	✓ Site clearing ✓ Increased soil erosion due to disturbances ✓ Soil salinization, acidification ✓ Habitat destruction and losses <u>Air quality</u> ✓ Obnoxious smell from bird droppings ✓ Site clearing and excavation works ✓ Transport of materials and waste ✓ Exhaust emissions for equipment including heavy duty trucks ✓ Excessive dust emissions <u>Vibration and Noise</u> ✓ Site clearing and excavation works ✓ Concrete works ✓ Cutting of roads ✓ Disturbance to workers/local communities <u>Visual intrusion</u> ✓ Construction sites <u>Generation and disposal of solid waste</u> ✓ Construction waste ✓ Disposal of Obsolete chemicals and unusable equipment/ materials at research institute ✓ Disposal of laboratory waste	Moderate Moderate Minor Moderate Moderate Moderate Moderate Moderate Minor Minor Moderate Moderate Minor Moderate Moderate Moderate	✓ Unavailability and poor use of personal protective equipment and limited/ no enforcement process <u>Occupational health and Safety</u> ✓ Risks related to capacity deficiencies in biotechnology and biosafety. ✓ Lack of awareness creation programs on health and safety ✓ Unavailability and poor use of personal protective equipment and limited/ no enforcement process ✓ Use of pesticides and improper disposal of empty containers ✓ Exposure to risks from snake bites ✓ Exposure to water related diseases <u>Hiring of labour</u> ✓ Compliance with national labour laws including wages and working conditions ✓ Child and forced labour ✓ Use of local labour <u>Cultural Heritage</u> ✓ Access to local shrines ✓ Preservation of local cultural identity and heritage ✓ Compensation issues ✓ Community pride and support ✓ Community relinquishing/ sharing heritage for greater good	Major Minor Major Major Major Moderate Moderate Moderate Minor Moderate Moderate Moderate Moderate Major Moderate

Sub- Project activities/interventions	Potential Impact Issues/ concerns			
	Environmental		Social	
	Issue	Significance	issue	Significance
generating activities for women and youth **15.** Support women and youth to supply poultry products to key institutions and programs including the school feeding program **16.** Promote the consumption of local poultry to improve household nutrition	✓ Disposal of wastes generated from field trials and by laboratories ✓ Unsafe disposal of used pesticide containers <u>Pesticide management</u> ✓ Lack of integrated approach to limiting crop pests: elimination of the natural enemies of crop pests and consequent alteration of biological pest control methods. ✓ Development of resistance to pesticides, encouraging increases in and reliance on chemical pesticides. ✓ Weak institutional capacity for pesticide management (control import, sale and distribution of pesticides) <u>Public health and safety, and traffic issues</u> ✓ Construction works ✓ Poor management of agrochemicals ✓ Waterborne diseases	Moderate Major Moderate Moderate Major Moderate Major Moderate	<u>Resource Access and Possible Restriction</u> ✓ Rights to question and have individual considerations addressed ✓ Possible alternative options ✓ Established grievance redress options	 Moderate Moderate Major

5.4 Cumulative Impacts

The SIP is intended to complement some other agricultural initiatives in the Savannah zone especially the SAPIP which is a major initiative in the region. The SAPIP is about a year into its execution phase and there is need to consider its current and anticipated impacts on the physical and social environments vis-à-vis additional contributions expected from the upcoming SIP activities, for collective planning and actions.

The SAPIP is aimed at promoting activities that will improve the socio- economic well- being of farming communities in the savannah zone and it includes among others, the provision of basic infrastructure such as rehabilitation of feeder roads and farm-tracks, rehabilitation of irrigation canals, improvement of water harvesting and distribution for lowland rice, development of Processing & Marketing Infrastructure especially as corporate rural enterprises; and rehabilitation of warehouses.

Some adverse impacts arising from these SAPIP activities have been identified and management plans already provided to address these impacts. Fortunately, the implementation structures for both the SIP and SAPIP are the same hence it is easy to formulate plans to tackle impacts from both projects holistically.

Other trending projects like GCAP has proposed structures to manage environmental and social impacts but so far appears to have limited outcomes to learn lessons from, to benefit the SIP. The SIP will further engage these projects to share their experiences in such areas as mechanisms for grievance management, pest management, occupational health and safety, land tenure and security, waste management etc.

5.5 Mitigation Measures

All moderate and major adverse impacts are considered for mitigation. Specific measures have been suggested in this regard where practicable. With regard to negligible and minor impacts where the project activity is not expected to cause any significant impact in such cases, best practice measures and mitigation have also been recommended where appropriate to improve the environmental and social performance of the Project.

The mitigation options considered include project modification, provision of alternatives, project timing, pollution control, compensations and relocation assistance. In cases where the effectiveness of the mitigation is uncertain, monitoring programmes are introduced. The mitigation measures or guidelines have been designed in order to avoid, minimise and reduce negative environmental and social impacts.

The SIP will foster an integrated agro-production and management systems that will prevent environmental resources depletion and will support social equity. In this regard, SIP framework combines several agro and environmental techniques, namely appropriate erosion control, conservative soil preparation techniques, crop rotations and, whenever appropriate, replenishment of the soil fertility through the application of organic fertilizers and precision fertilization.

Furthermore, varieties resistant to pests and diseases and not demanding in water and nutrients will be sought. By increasing soil productivity and improving soil organic and moisture levels in the plant root zone, these techniques are very positive from the environmental point of view.

Finally, the project will promote sustainable intensification, which will reduce the pressure to open uncontrolled new lands, thereby reducing dysfunctional deforestation and soil erosion risks.

The potential risks/shocks/ stress and the mitigation measures are described in **Table 12** below.

Table 12: Potential Risks and Mitigation and Enhancement Measures

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures
Involuntary resettlement- land acquisition, population displacement and compensation	*Land acquisition and compensation issues* ✓ Consult affected chief/land owners/users/ communities and seek their consent early in the project development process ✓ Allow affected persons to salvage their properties (including crops) before mobilizing to site to start work ✓ Ensure fair and adequate compensation is paid to all affected persons prior to commencement of activities as per the provisions of the OS-2 on Involuntary resettlement ✓ A formal grievance redress mechanism to be established and implemented ✓ Formalise land acquisition through Lands Commission *Maintaining livelihoods* ✓ Ensure appropriate compensations are paid to PAPs or alternative arrangements made to ensure security of livelihoods in consultation with affected persons; ✓ Employment and other opportunities to be given to local communities as much as possible. ✓ Portions of land may be given to community members to cultivate in the dry season using the pivoted irrigation system ✓ Commercial farmers to assist community members with free tractor services and also access to improved seeds. ✓ Cocoa Research Institute of Ghana (CRIG) has recently produced Shea variety which fruits in 3 years instead of the traditional species which matures after 9- 10 years. Educate and encourage farmers on the new variety of shea as a means of also maintaining livelihood *Cultural heritage* ✓ Traditional authority responsible for sanctity of local shrines properly identified and consulted ✓ Necessary cultural rites agreed with community and performed prior to access to sites and at pre- determined time periods
Biodiversity, renewable resources and ecosystem resources	*Maintaining biological diversity and ecosystem resource* ✓ Avoid unnecessary exposure or access to sensitive habitat. ✓ Regularly inspect or monitor sensitive areas e.g. swamps/ wetlands in the area prior to start of work and during project. ✓ Planting of trees (eg. Cassia) to replace any felled trees ✓ Create fire belts around farms ✓ Maintain biodiversity corridors and ensure compliance with environmental regulations that prohibit farming in environmentally sensitive areas

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures
Pollution prevention and control, hazardous materials and resource efficiency	*Water resources and pollution* ✓ No work including land clearing to be executed under aggressive weather conditions such as rains or stormy conditions. ✓ No solid waste, fuels, or oils to be discharged into any section of a waterway. ✓ Land preparation to be done in phases to minimize impacts and exposure of soil, as much as possible. ✓ Materials removed from land preparation activities which cannot be used eg. tree stumps and debris will be disposed of appropriately including reuse. ✓ Temporary sediment barriers to be installed on slopes to prevent silt from entering water courses. ✓ Maintenance, fuelling and cleaning of vehicles/ tractors and equipment to take place at off-site workshop with adequate leakage prevention measures ✓ Treatment of feed and poultry processing wastewater to meet EPA standards for effluent discharges prior to release into local water bodies to avoid pollution. For example, through the use of bio-digesters *Air quality and noise* ✓ Local communities will be duly informed early of all land clearing activities. ✓ Loading and transportation of land debris shall be done during daytime and will avoid relatively noisy equipment operating during the night; ✓ Stock piles of soils will be covered to prevent re-suspension of dust into the air; ✓ Speed limit shall be set for vehicles for transportation of any materials within local communities to avoid re- entrainment of dust ✓ Adequate road signs to be planted on dust roads to limit vehicular speeds ✓ Properly designed and constructed speed ramps on access/ community roads ✓ Frequent cleaning of bird brooder house to minimize smell *Generation and disposal of waste* ✓ Apply the principles of Reduce, Recycle, Reuse and Recover for waste management. ✓ Any excavated earth materials will, as much as possible, be re-used for back filling purposes to reduce waste ✓ Ensure that the required amounts of construction materials are delivered to site to reduce the incidence of excess material ✓ Provide bins on site for temporary storage of garbage such as lubricant containers, drinking water sachets/ bottles and carrier bags/packaging materials. ✓ Droppings from poultry to be used as manure ✓ Feed processing waste to be processed into cake, oil and pellets. ✓ Spoiled products (meat) disposed of through accredited waste disposal companies (Zoom lion Company) ✓ Install bio-digesters to dispose of birds' feathers and blood

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures
	✓ Waste collection bins to be sited at vantage points to serve the community ✓ Warning signs to be posted at suitable locations and in local language against littering with possible sanctions indicated *Hazardous wastes* ✓ Separate hazardous wastes (agrochemical containers, asbestos etc) from all other wastes ✓ Liaise with EPA to dispose of hazardous wastes (such as asbestos materials) *Pest management* ✓ Pest management plan to be prepared to guide the project consistent with other initiatives like SAPIP and GCAP *Resource use efficiency* ✓ Ensure wise use of energy and water resources
Labour conditions, health and safety	*Occupational health and safety* ✓ Engage experienced local community members for land clearing ✓ All workers should be given proper induction/orientation on safety. ✓ Any contractor engaged to have Health & Safety procedures to guide activities. ✓ Regularly service all equipment and machinery to ensure they are in good working condition. ✓ Ensure there are first aid kits on site and a trained person to administer first aid. ✓ Provide and enforce the use of appropriate personal protective equipment (PPE) such as safety boots, hand gloves, nose masks, etc. ✓ Proof of competence for all equipment/machine operators will be required and established through inspection of valid drivers or operator's license or documents. ✓ Comply with all site rules and regulations. ✓ Apply sanctions where safety procedures are not adhered to. ✓ Workers educated on personal and public health issues. Protection eg., condoms provided against sexually transmitted diseases ✓ PPEs to be provided for all field workers and usage will be enforced to provide protection against chemicals and also reptiles. ✓ Farmers will be educated on hazards and encouraged to use PPEs ✓ All empty agrochemical containers to be physically destroyed and properly disposed of eg. Land burial. ✓ Regular training programs will be organized for workers on safety and health issues and effective use of equipment/machinery; *Community health and safety* ✓ Encourage community leadership to form watch committees to improve security ✓ Work with local police force to provide police posts at all major project areas

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures
	✓ First aid facilities to be available at all sites with suitable arrangements with local health facilities to deal with emergencies *Visual intrusion* ✓ Local communities to be well informed of upcoming project using appropriate communication tools; ✓ Land preparation and other physical activities to be done in sections to reduce impacts of change and visual intrusions to the local communities. *Hiring of Labour* ✓ National labour laws to be followed to ensure satisfactory wages as well as working conditions ✓ Child labour will not be allowed. ✓ Contract agreements will include clauses to emphasize zero tolerance for sexual harassment ✓ Workers to have code of conduct as part of their employment letters/ documentation ✓ Sanitary facilities to be provided including drinking water ✓ Emergency response plans for farms, warehouses, feed and poultry processing facilities including toolbox meetings and fire drills.

5.6 Climate Change Risks and Adaptation Measures

The NSEZ is susceptible to prolonged dry spells, drought, wind storms, heat waves and flooding. Severe droughts and flooding as well as other extreme events cause infrastructure damages, crop failure, fisheries destruction, and loss of biodiversity. This has significant implications on livelihoods of agricultural and pastoral communities. More so, community forest exploitation, cropping along river banks and shifting cultivation practices can further exacerbate the impacts of floods leading to increased soil degradation and loss of agriculture yields.

Consistent with the AfDB Climate Change Safeguards System, SIP has been classified as Category II, requiring the implementation of adaptation measures to increase the resilience of communities and the infrastructure to be rehabilitated to withstand the impacts of climate change. Drawing on the Ghana National Climate Change Policy, the proposed SIP will address critical climate adaptation needs of the smallholder farmers and other value chain actors in the project area. The project will ensure that crops and infrastructure are climate resilient to account for programmed climatic conditions. Some of the priority areas of action include:

- Increase access to seeds adapted (e.g. drought resistance seeds) to local conditions;
- Promote good agriculture practices such as sustainable land management for increased agricultural yields;
- Facilitate monitoring and early warning systems for floods and drought events;
- Build capacity for agricultural planning and extension services to facilitate dissemination of climate information to farmers;
- Support flood protection barriers along rivers;
- Update infrastructure design standards;
- Develop quality storage facilities to reduce post-harvest losses;
- Climate change adaptation technologies for agro-food, ecosystems and sustainable water resources development; and
- Promote livelihood diversification.

Overall, the project will complement similar systems being developed and implemented by SAPIP to facilitate climate resilience along the selected value chains by promoting climate smart agriculture and improved agriculture technologies.

6.0 MEASURES TO DEVELOP APPROPRIATE ESMPS FOR SUBPROJECTS

The framework for the Environmental and Social Management Plan (ESMP) provides guidance on procedures to be followed and standards to be met in implementing the SIP which should be in agreement with national and African Development Bank operational safeguard provisions. Institutional arrangements with clearly defined roles and responsibilities as well as monitoring protocols to be followed are presented to ensure that the required provisions are adhered to. Budgetary estimates are provided to support the implementation of the ESMP.

6.1 Environmental and Social Preliminary Screening Process

The purpose of the preliminary screening is to: (i) determine whether projects are likely to have potential negative environmental and social impacts; (ii) decide if EPA Form EA1 needs to be submitted to EPA; (iii) identify appropriate mitigation measures for activities with adverse impacts; (iv) incorporate mitigation measures into the project design; (v) review and approve project proposals and (vi) monitor environmental and social impacts and concerns during implementation. The early screening process will also consider the provisions of the AfDB involuntary resettlement for possible displacement and livelihood impacts. Hence, the screening will cover both physical and economic displacement including illegal squatters and encroachers.

The SIP Environmental/Social Safeguard Officer (ESSO) must foremost carry out the preliminary environmental and social screening of proposed projects by using the checklist suggested in **Annex 4**. The EPA (Regional or National) should be informed of the screening outcome for further advice in line with the Ghana Environmental Assessment (EA) procedures. During preliminary screening of the projects/subproject activities by the SIP Environmental/Social Safeguard Officer, where there may be doubt concerning project risks and impacts, the EPA should be consulted for guidance.

The SIP will comprise several subprojects, and most of which are expected to fall within Category 3 project. However, based on the outcome of the screening, any subproject/project activities that would be considered as Category 1 or 2, the Ghana Environmental Assessment procedures must be followed and also an ESMP must be prepared to guide the implementation of the Category 1 or 2 projects. It may also then be referred to the AfDB for clearance.

6.2 ESIA Procedure to be followed

The African Development Bank Operational Safeguard policy OS-1 provides guidance on the environmental assessment procedures for AfDB funded projects. The Ghana EIA procedures have also established an acceptable process to screen and evaluate all developments, undertakings, projects and programmes which have the potential to give rise to significant environmental impacts. The two processes are largely similar and the Ghanaian procedures are therefore given in the following sections and will mostly be statutorily followed by all sub-projects under the SIP to obtain environmental permits if required.

Those projects requiring EPA clearance will only commence when an environmental permit has been procured from the EPA. The Agency has provided the list of projects for which ESIA is mandatory. These

are provided in the **Annex 1B** and are consistent with the African Development Bank categorization of projects.

The steps below will be followed by MOFA, the implementing agency to ensure environmental and social compliance of SIP activities.

Step 1: Environmental Registration of Project

The Environmental/Social Safeguard Officer (ESSO) with the PIU will provide safeguard supervision over all SIP associated projects. The appointed Environmental/Social Safeguard Officer (ESSO) who is also responsible for the SAPIP and therefore has considerable experience with safeguards implementation, will be directly responsible for the registration of SIP subprojects with the EPA as required by law. Following from the outcome of the preliminary screening exercise, the EPA will advise on which subprojects should be registered with the Agency. The Environmental Assessment Registration Forms are available at all EPA offices to register every project/ development that may have an impact on the environment.

A sample copy of the EA1 Form is provided in **Annex 5** and the mitigation measures suggested in this ESMF as well as the checklist used in the screening exercise should assist to complete this Form. For projects for which ESIA are mandatory, the ESSO should register with Form EA2, otherwise Form EA1 can also be used. This is a requirement under the Environmental Assessment Regulations LI 1652 (1999).

Step 2: Statutory Screening

This activity in accordance with the EAR 1999 LI1652 is the responsibility of the EPA. The Agency, within 25 days of receiving the Registration Form will take a decision by placing the project at the appropriate level of environmental assessment. The results will be communicated to SIP-MOFA, the implementing agency, with reasons, which could be any of the following:

- Objection to the project
- No objection to the project and no further reporting required (equivalent to AfDB Category 3 Project)
- Preliminary Environmental Assessment (PEA) will be required (equivalent to AfDB Category 2 Project)
- Environmental and Social Impact Assessment (ESIA) required (equivalent to AFDB Category 1 Project).

For projects receiving the 'no objection' from the EPA with no further reporting required (AfDB Category 3 project) and therefore have only minor environmental and social risks, the SIP-MOFA may move to implementation in accordance with pre-approved standards or codes of practices or they pre-approved guidelines for environmental and social management.

Step 3: Conduct environmental and social assessment studies

For the SIP projects for which the decision is the conduct of a PEA (equivalent AfDB category 2 project) or and ESIA (AfDB Category 1 Projects), stand-alone reports will be prepared. The Ghana EPA statutorily requires an ESIA for agricultural projects in excess of 40ha.

The ESSO will prepare the Terms of Reference (ToR) for the ESIA, and follow procurement rules for the recruitment of consultants for the ESIA. The ToR may be prepared using issues identified during the screening exercise and also the registration of the project with the EPA. Also, the impact mitigation measures provided in this ESMF may provide some basis for the design of the ToR. To facilitate the formulation of the ToR, a template has been prepared and provided in the **Annex 6** of this report.

The ESIA will identify and evaluate potential environmental impacts for the proposed activities, evaluate alternatives, and design mitigation measures. The preparation of the ESIA will be done in consultation with stakeholders, including people who may be affected. Public consultations are critical in preparing a proposal for the activities of the projects likely to have impacts on the environment and population. The public consultations should identify key issues and determine how the concerns of all parties will be addressed in the ESIA. When an ESIA is necessary, the administrative process enacted by the EPA will be followed and executed.

Procedures for projects requiring an ESIA

First stage: Preparation of Terms of Reference (ToR)

The results of identification, and extent of the ESIA (scoping), the terms of reference will be prepared by the ESSO.

Second stage: Selection of consultant

Third stage: Preparation of the ESIA with public consultation

The report will follow the following format:

- Description of the subproject
- Discussion and evaluation of alternatives
- Legal and regulatory framework
- Description of the environmental and social conditions of the study area
- Process of public consultations
- Identifying potential impacts of proposed sub-projects
- Development of mitigation measures and a monitoring plan, including estimates of costs and responsibility for implementation of surveillance and monitoring

Step 4: Review and approval of the ESIA for the sub-project; Publication / Dissemination of ESIA

The Environmental/Social Safeguard Officer will submit the draft ESIA report to EPA. The report will be reviewed by a cross-sectoral National Environmental and Social Impact Assessment Technical Review Committee (ESIA/TRC) which is expected to:

- Assist the Agency in screening/reviewing all Environmental Assessment Applications and Reports (Environmental Impact Statements, Environmental Management Plans and other related reports)
- Make recommendations to the Executive Director of the EPA for final decision-making
- Provide technical advice on conduct of assessments and related studies on undertakings and the reports submitted on them;
- Make recommendations on the adequacy of the assessment and any observed gap;
- Advice on the seriousness of such gaps and the risks or otherwise to decisions required to be made recommend whether the undertakings as proposed must be accepted and under what conditions, or not to be accepted and the reasons, as well provide guidance on how any outstanding issue/areas may be satisfactorily addressed.

Copies of the ESIA report will be placed at vantage points including the EPA Library, relevant District Assembly, EPA Regional Offices and MOFA head office and regional offices. EPA serves a 21-day public

notice in the national and local newspapers about the ESIA publication and its availability for public comments.

Step 5: Public Hearing and Environmental Permitting Decision (EPD)

Regulation 17 of the LI 1652 specifies three conditions that must trigger the holding of a public hearing on a project by the Agency. These are:

- Where notice issued under regulation 16 results in great public reaction to the commencement of the proposed undertaking;
- Where the undertaking will involve the dislocation, relocation or resettlement of communities; and
- Where the Agency considers that the undertaking could have extensive and far-reaching effects on the environment.

Where a public hearing is held, the processing of an application may extend beyond the prescribed timelines required for EPA's actions and decision-making.

Environmental Permitting Decision (EPD)

Where the draft ESIA report is found acceptable, MOFA will be notified to finalise the reports and submit eight hard copies and an electronic copy. Following submission to EPA, the implementing agency shall be issued an Environmental Permit within 15 working days and issue gazette notices. Where the undertaking is approved, MOFA shall pay processing and permitting fees prior to collection of the permit. The fees are determined based on the Fees and Charges (Amendment) Instrument 2015, LI 2228.

Other relevant African Development Bank provisions

The national provisions for the management of resettlement related issues are not as fully developed and therefore not consistent with the AfDB operational safeguard requirements. Thus, it is expected that the AfDB OS- 2 will be mostly applied under the SIP and a separate document to guide the process.

6.3 Technical Specification and Standards

Technical specification

SIP-MOFA with technical support from relevant MOFA directorates and the regional and district offices, will be responsible for the development and presentation of clear guidelines for the design and provision of technical specifications and standards for project implementation. These will ensure the streamlining of approaches and activities for sound environmental and social implementation of projects. These will include adequate reference to sector norms or best agricultural practices or prescribed national codes of practices or international best practices.

Environmental standards

The EPA is responsible for setting environmental standards and has in place both general and sector specific guideline values. These standards and some guidelines are required for the management of pollutant emissions. In situations where standards which therefore have legal backing are available these must be followed. Otherwise, national guidelines or the African Development Bank guidelines could be used. In most cases, these are practically similar.

6.4 Environmental and Social Clauses for Contractor Agreements

Environmental and Social Clauses should be included in the Technical Specifications and be accounted for as part of the Project investment's overall implementation budget.

The contractor in this case refers to any individual or firm or consultant engaged to provide technical services (e.g. design, surveys, construction, installations or any associated works) for the project. The contractor will be responsible for ensuring compliance with all relevant legislation as well as managing the potential environmental, social, health and safety impacts of all contract activities specified in all the approved environmental documents or reports for the project such as ESMF and ESMP or as may be recommended by key stakeholders and sector ministries including EPA, MoFA, and WRC. The Contractor will be expected to demonstrate commitment to the environment at all levels in the Contractor's management structure. The Contractor will be required to identify individuals responsible for overall environment, social (including community relations); and health and safety management. Contractor implementation of the requirements of the ESMF/EIA will form part of contractual agreement and Contractor project reporting requirements to SIP-MoFA.

It should also be stated that the contractor should engage the services of a Health, Safety and Environment officer as well as a Community Liaison Officer to ensure proper application and compliance with principles and prerogatives in these Clauses. The SEFP will prepare quarterly reports to submit to the project social and environmental unit, and join the field supervision missions jointly organized with the AfDB twice a year. Terms of Reference for hiring a SEFP should be provided and made clear to all parties and should include the responsibilities of the contractors in sub-projects implementation. This should further specify the environmental and social requirements in the contractual agreements and should include the development of a contractor's environmental and social management plan (CESMP) by the contractor before construction works, monitoring, supervision and reporting requirements The CESMP should include mitigation of construction and indirect behaviour of their workers and environmental, occupational health and safety.

7.0 ENVIRONMENTAL AND SOCIAL MONITORING AND REPORTING ARRANGEMENT

The monitoring programme aims to ensure that the implementation of mitigation measures contribute to achieving the desired management objectives and outcomes. This process will also review the minimization actions proposed. It is recommended that SIP initiates steps as soon as possible to create a database, system of collection, recording and organizing every basic information required. This is because the SIP as at the implementation stage lacks detail in terms of design of infrastructure, location among others. However, in the monitoring process, the selection, development and evaluation of indicators should be based on their relevance and feasibility.

Monitoring plans have been developed for implementation at the project level, and these are described in **Table 13.**

Table 13:Sample ESMP for Significant Adverse Impacts

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures	Monitoring and reporting (including indicators)	Implementation responsibility	Timing	Estimated costs
Involuntary resettlement- land acquisition, population displacement and compensation	*Land acquisition and compensation issues* ✓ Consult affected chief/land owners/users/ communities and seek their consent early in the project development process	✓ Minutes of meetings,	✓ Commercial farmer, safeguard specialist	✓ Pre- project phase	Part of project cost
	✓ Allow affected persons to salvage their properties (including crops) before mobilizing to site to start work	✓ Complaints from affected persons	✓ Commercial farmer	✓ Pre- project phase	Part of project cost
	✓ Ensure fair and adequate compensation is paid to all affected persons prior to commencement of activities as per the provisions of the OS-2 on Involuntary resettlement	✓ Complaints from affected persons	✓ Commercial farmer, safeguard specialist, PIU	✓ Pre- project phase	Part of project cost
	✓ A formal grievance redress mechanism to be established and implemented	✓ GRM document	✓ Commercial farmer, safeguard specialist, PIU	✓ Pre- project and implementation phases	Part of project cost
	✓ Formalise land acquisition through Lands Commission	✓ Land document	✓ Commercial farmer, PIU	✓ Pre- project phase	
	Maintaining livelihoods ✓ Ensure appropriate compensations are paid to PAPs or alternative arrangements made to ensure security of livelihoods in consultation with affected persons;	✓ Compensation reports	✓ Commercial farmer, safeguard specialist, community leaders, affected persons	✓ Pre- project stage	Part of project cost

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures	Monitoring and reporting (including indicators)	Implementation responsibility	Timing	Estimated costs
	✓ Employment and other opportunities to be given to local communities as much as possible.	✓ No of employed community members	✓ Commercial farmer	✓ Implementation phase	Part of project cost
	✓ Portions of land may be given to community members to cultivate in the dry season using the pivoted irrigation system	✓ No of community members benefitting from arrangement	✓ Commercial farmer, community leaders	✓ Implementation phase	Part of project cost
	✓ Commercial farmers to assist community members with free tractor services and also access to improved seeds.	✓ No. of community members benefiting from arrangement	✓ Commercial farmer	✓ Implementation phase	Part of project cost
	✓ Cocoa Research Institute of Ghana (CRIG) has recently produced Shea variety which fruits in 3 years instead of the traditional species which matures after 9- 10 years. Educate and encourage farmers on the new variety of shea as a means of also maintaining livelihood	✓ No. of farmers educated on new variety; No. of shea trees planted, training report	Farmer	✓ Pre- project and implementation phase	10,000
	Cultural heritage ✓ Traditional authority responsible for sanctity of local shrines properly identified and consulted	✓ Meeting report	✓ Commercial farmer, traditional authority, safeguard specialist	✓ Pre- project stage	Part of project cost
	✓ Necessary cultural rites agreed with community and performed prior to access to sites and at pre- determined time periods	✓ Photographic evidence	✓ Traditional authority, commercial farmer	✓ Pre- project and implementation stages	Part of project cost

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures	Monitoring and reporting (including indicators)	Implementation responsibility	Timing	Estimated costs
Biodiversity, renewable resources and ecosystem resources	*Maintaining biological diversity and ecosystem resource* ✓ Avoid unnecessary exposure or access to sensitive habitat. ✓ Regularly inspect or monitor sensitive areas e.g. swamps/ wetlands in the area prior to start of work and during project. ✓ Planting of trees (eg. Cassia) to replace any felled trees ✓ Create fire belts around farms	✓ Monitoring Reports ✓ Monthly Monitoring Reports, Audit reports ✓ Monthly monitoring Reports ✓ Visual inspection	✓ Farmer, safeguard specialist, Ext officers ✓ Farmer, safeguard specialist, MoFA extension officers ✓ Farmer, MoFA extension officers ✓ Commercial farmer	✓ Pre- project, implementation stage ✓ Pre- project, implementation stage ✓ Implementation stage ✓ Implementation stage	Part of project cost 25,000 30,000 30,000
Pollution prevention and control, hazardous materials and resource efficiency	*Water resources and pollution* ✓ No work including land clearing to be executed under aggressive weather conditions such as rains or stormy conditions. ✓ No solid waste, fuels, or oils to be discharged into any section of a waterway. ✓ Land preparation to be done in phases to minimize impacts and exposure of soil, as much as possible. ✓ Materials removed from land preparation activities which cannot be used eg. tree stumps and debris will be	✓ Monitoring report ✓ Monitoring report ✓ Monitoring report ✓ Monitoring report, visual inspections	✓ Farmer, extension officers ✓ Farmer, extension officers ✓ Farmer, safeguard specialist, extension officers ✓ Farmer, extension officers	✓ Implementation stage ✓ Implementation stage ✓ Implementation stage ✓ Implementation stage	Part of project cost Part of project cost Part of project cost Part of project cost

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures	Monitoring and reporting (including indicators)	Implementation responsibility	Timing	Estimated costs
	disposed of appropriately including reuse. ✓ Temporary sediment barriers to be installed on slopes to prevent silt from entering water courses. ✓ Maintenance, fuelling and cleaning of vehicles/ tractors and equipment to take place at off-site workshop with adequate leakage prevention measures ✓ Treatment of feed and poultry processing wastewater to meet EPA standards for effluent discharges prior to release into local water bodies to avoid pollution. For example, through the use of bio-digesters	✓ Monitoring report, visual inspection ✓ Monitoring report, visual inspection ✓ Monitoring report	✓ Farmer, extension officers ✓ Farmer ✓ Farmer, safeguard specialist	✓ Implementation stage ✓ Implementation stage ✓ Implementation stage	Part of project cost Part of project cost Part of project cost
	Air quality and noise ✓ Local communities will be duly informed early of all land clearing activities. ✓ Loading and transportation of land debris shall be done during daytime and will avoid relatively noisy equipment operating during the night; ✓ Stock piles of soils will be covered to prevent re-suspension of dust into	✓ Monitoring report, feedback from community ✓ Monitoring report, feedback from community ✓ Monitoring report, feedback from community	✓ Farmer, extension officers ✓ Farmer, extension officers ✓ Farmer, extension officers	✓ Pre- project and implementation stages ✓ Implementation stages ✓ Implementation stages	Part of project cost Part of project cost Part of project cost

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures	Monitoring and reporting (including indicators)	Implementation responsibility	Timing	Estimated costs
	the air; Speed limit shall be set for vehicles for transportation of any materials within local communities to avoid re- entrainment of dust				
	✓ Adequate road signs to be planted on dust roads to limit vehicular speeds	✓ Visual inspection	✓ Farmer	✓ Implementation stages	5,000
	✓ Properly designed and constructed speed ramps on access/ community roads	✓ Visual inspection	✓ Farmer, community, district assembly	✓ Implementation stages	10,000
	✓ Frequent cleaning of bird brooder house to minimize smell	✓ Monitoring report, visual inspection	✓ Farmer, extension officers	✓ Implementation stages	Part of project cost
	Generation and disposal of waste				
	✓ Apply the principles of Reduce, Recycle, Reuse and Recover for waste management.	✓ Monitoring reports	✓ Farmer, safeguard specialist	✓ Implementation stage	Part of project cost
	✓ Any excavated earth materials will, as much as possible, be re-used for back filling purposes to reduce waste	✓ Monitoring report, visual inspection	✓ Farmer, safeguard specialist	✓ Implementation stage	Part of project cost
	✓ Ensure that the required amounts of construction materials are delivered to site to reduce the incidence of excess material	✓ Monitoring report, visual inspection	✓ Farmer	✓ Implementation stage	Part of project cost
	✓ Provide bins on site for temporary storage of garbage such as lubricant containers, drinking water sachets/ bottles and carrier bags/packaging materials.	✓ Visual inspections	✓ Farmer	✓ Implementation stage	Part of project cost

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures	Monitoring and reporting (including indicators)	Implementation responsibility	Timing	Estimated costs
	✓ Droppings from poultry to be used as manure	✓ Monitoring report, visual inspections	✓ Farmer	✓ Implementation stage	Part of project cost
	✓ Feed processing waste to be processed into cake, oil and pellets.	✓ Monitoring report	✓ Farmer	✓ Implementation stage	Part of project cost
	✓ Spoiled products (meat) disposed of through accredited waste disposal companies (Zoom lion Company)	✓ Monitoring report	✓ Farmer	✓ Implementation stage	Part of project cost
	✓ Install bio-digesters to dispose of birds' feathers and blood Waste collection bins to be sited at vantage points to serve the community	✓ Monitoring report, visual inspection	✓ Farmer	✓ Implementation stage	Part of project cost
	✓ Warning signs to be posted at suitable locations and in local language against littering with possible sanctions indicated	✓ Visual inspection	✓ Farmer	✓ Implementation stage	5,000
	Hazardous wastes ✓ Separate hazardous wastes (agrochemical containers, asbestos etc) from all other wastes	✓ Monitoring records and reports	✓ Farmer	✓ Implementation stage	Part of project cost
	✓ Liaise with EPA to dispose of hazardous wastes (such as asbestos materials)	✓ Monitoring records and reports	✓ Farmer, safeguard specialist, MoFA extension officers	✓ Implementation stage	20,000
	Pest management Pest management plan to be prepared to guide the project consistent with other initiatives like SAPIP and GCAP	✓ Pest management plan	✓ Farmer, safeguard specialist, MoFA extension officers	✓ Implementation stage	25,000

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures	Monitoring and reporting (including indicators)	Implementation responsibility	Timing	Estimated costs
Labour conditions, health and safety	*Occupational health and safety*				
	✓ Engage experienced workers for land clearing	✓ Monitoring records	✓ Farmers	✓ Implementation stage	Part of project cost
	✓ All workers should be given proper induction/orientation on safety.	✓ Monitoring records	✓ Farmer	✓ Implementation stage	Part of project cost
	✓ Any contractor engaged to have Health & Safety procedures to guide activities.	✓ Health and safety plan	✓ Farmer, sub- contractors	✓ Pre- project stage	Part of project cost
	✓ Regularly service all equipment and machinery to ensure they are in good working condition.	✓ Maintenance records	✓ Farmer	✓ Implementation stage	Part of project cost
	✓ Ensure there are first aid kits on site and a trained person to administer first aid.	✓ Health and safety plan	✓ Farmer	✓ Implementation stage	10,000
	✓ Provide and enforce the use of appropriate personal protective equipment (PPE) such as safety boots, hand gloves, nose masks, etc.	✓ Monitoring records	✓ Farmer	✓ Implementation stage	5,000
	✓ Proof of competence for all equipment/machine operators will be required and established through inspection of valid drivers or operator's license or documents.	✓ Maintenance records	✓ Farmer, extension officers	✓ Implementation stage	Part of project cost
	✓ Comply with all site rules and regulations.	✓ Monitoring reports	✓ Workers, Farmer	✓ Implementation stage	Part of project cost
	✓ Apply sanctions where safety procedures are not adhered to.	✓ Monitoring reports	✓ Farmer	✓ Implementation stage	Part of project cost

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures	Monitoring and reporting (including indicators)	Implementation responsibility	Timing	Estimated costs
	✓ Workers educated on personal and public health issues. Protection eg., condoms provided against sexually transmitted diseases	✓ Monitoring reports	✓ Farmer, extension officers	✓ Implementation stage	10,000
	✓ PPEs to be provided for all field workers and usage will be enforced to provide protection against chemicals and also reptiles.	✓ Monitoring records	✓ Farmers	✓ Implementation stage	Part of project cost
	✓ Workers will be educated on hazards and encouraged to use PPEs	✓ Monitoring reports	✓ Farmer	✓ Implementation stage	10,000
	✓ All empty agrochemical containers to be physically destroyed and properly disposed of eg. Land burial.	✓ Monitoring reports	✓ Farmer, extension officers	✓ Implementation stage	25,000
	✓ Regular training programs will be organized for workers on safety and health issues and effective use of equipment/machinery;	✓ Training reports	✓ Farmer, extension officer	✓ Implementation stage	20,000
	Community health and safety ✓ Encourage community leadership to form watch committees to improve security	✓ Monitoring report	✓ Safeguard specialist, community members	✓ Implementation stage	10,000
	✓ Work with local police force to provide police posts at all major project areas	✓ Monitoring report	✓ Farmer, community, police force	✓ Implementation stage	5,000
	✓ First aid facilities to be available at all sites with suitable arrangements with	✓ Monitoring report	✓ Farmers	✓ Implementation stage	10,000

Environment, Social and Health Impact Issue/ Concern	Proposed Mitigation Action/ Measures	Monitoring and reporting (including indicators)	Implementation responsibility	Timing	Estimated costs
	local health facilities to deal with emergencies				
	Visual intrusion ✓ Local communities to be well informed of upcoming project using appropriate communication tools; ✓ Land preparation and other physical activities to be done in sections to reduce impacts of change and visual intrusions to the local communities.	✓ Monitoring report ✓ Monitoring report	✓ Farmer, MoFA extension officer ✓ Farmer	✓ Pre- proposal stage ✓ Implementation phase	5,000 Part of project cost
	Hiring of Labour ✓ National labour laws to be followed to ensure satisfactory wages as well as working conditions ✓ Child labour will not be allowed.	✓ Monitoring report ✓ Monitoring report	✓ Farmer ✓ Farmer, Extension officer	✓ Implementation stage ✓ Implementation stage	Part of project cost Part of project cost
					US$265,000

7.1 Monitoring and reporting, Sub-project Mitigation and Management Plans

Monitoring and evaluation of safeguards compliance is assigned to Project Co-ordination and Management Unit, precisely the Social and Environmental Safeguards Unit (SESU). ESMP Supervision will cover monitoring and review in order to achieve the following objectives:

- determine whether the project is being carried out in conformity with environmental and social safeguards and legal agreements;
- identify issues as they arise during implementation and recommend means to solve them;
- recommend changes in project concept/design, as appropriate, as the project evolves or circumstances change to enhance environmental and social benefits through lessons learnt;
- identify the key risks to project sustainability and recommend appropriate risk management strategies to the Proponent; and
- identify lapses in environmental and social compliance and ensure their correction and remediation of impacts.

7.1.1 Internal monitoring and Reporting

The foundation for the overall project monitoring and evaluation systems will be the logical framework, a series of key performance indicators and project operational manual (POM) which will be prepared by the PCMU shortly after project loan approval. MoFA will monitor overall operations for planning and facilitation purposes for the production aspects of the project, implementation of the drainage and roads infrastructure for attainment of national standards. The PCMU will monitor and evaluate overall impact of the project including environmental and social compliance and performance and compile the project's quarterly and annual reports for dissemination to the Bank Group (AfDB), MoFA, and other line ministries. A mid-term review (MTR) will be undertaken two years after project start to review the project's achievements and constraints. Similarly, upon completion of project investments at the end of program year four, the PCMU will prepare a Borrower's project completion report.

The initial assessment of national capacity indicates a satisfactory rating. The Ghana Statistical Service leads the efficient production and management of quality official statistics based on international standards, and will be used to assess the contribution of the project towards the country and regional development goals and objectives as defined in the relevant development plans. In using the performance indicators and targets specified in the results-based framework, project implementers tracking progress towards project results are expected to take special note of changes that reflect advancement towards the translation of outputs into development outcomes. In developing monitoring and planning indicators, they will be gender disaggregated. The key functions of the M&E Officer in the PCMU will be to ensure quality and accountability of monitoring; information management; facilitation of knowledge building; and knowledge sharing on monitoring and evaluation.

In addition, the Project Coordination and Management Unit at national (PCMU), in collaboration with all relevant authorities, will be responsible for the monitoring of the compliance of project implementation with the mitigation measures set out in the ESMPs and associated management plans. These officers will have responsibility for carrying out the monitoring by regularly visiting the projects, and pursuing the compliance and corrective measures required. This will include Compliance monitoring, which will comprises on-site inspection of activities to verify that measures identified in the ESMP are included in

the clauses for contractors are being implemented. This type of monitoring is similar to the normal technical supervision tasks ensuring that the Contractor achieves the required standards and quality of work. The contractor will be required to report to MoFA on Environmental and Social Compliance and Corrective Measures.

7.1.2 External Monitoring and Reporting

An appropriate social and environmental supervision plan will be developed aimed at ensuring the successful ESMP implementation. Environmental and social reports and Environmental Management Plans for projects will be submitted to the EPA after 12 months and 18 months of project operations, respectively.

On the other hand, the AfDB will require quarterly Environmental and Social project monitoring reports and an annual project progress report. These reports should feed into annual review of sub-project ESMPs.

7.2 Environmental and Social Reviews

An independently commissioned environmental and social audit will be carried out every eighteen (18) months. The audit team will report to Project Co-ordination, EPA, and the AfDB, who will lead the implementation of any corrective measures that are required. This audit will ensure that: i) the ESMF and further environmental processes are being implemented appropriately; ii) mitigation measures are being identified and implemented in due time.

The audit will be able to identify any amendments in ESMF approach that are required to improve its effectiveness. The audit also provides a strong incentive aiming to ensure ESMF implementation and individual ESMPs executed. The audit report will include:

- Summary of the environmental performance based on EIAs or PEAs, if required, and ESMP;
- Presentation of compliance and progress in the implementation of the ESMP;
- Number of staff/officers trained in implementation of the ESMF;
- Number of relevant Municipal and/or Zonal Offices' staff attending training courses and workshops in ESMP, PEA and EIA;
- Number of written warnings of violation of EIA/PEA/ESMP issued to project proponents; and
- Synopsis of the environmental monitoring results from individual subproject monitoring measures (as set out in the subproject ESIA/PEA/ESMP).

8.0 INSTITUTIONAL ARRANGEMENT FOR THE IMPLEMENTATION OF THE ESMF

8.1 Institutional Arrangements for ESMF Implementation

The main institutions involved with the implementation of the ESMF include:

- MOFA
- SIP Project Implementation Unit (PIU)
- Metropolitan/Municipal/District Assemblies (MMDAs)
- Environmental Protection Agency (EPA)
- Lands Commission
- Water Resources Commission
- Private Sector – Consultants and Contractors
- Donor – African Development Bank

The SIP PIU will comprise of the following key experts:

- Project coordinator:
- Environmental/Social Safeguards Specialist
- Communication Specialist
- Procurement Specialist
- Technical Specialist
- Financial Management Specialist
- Monitoring and Evaluation Specialist

The implementation activities will be under the overall guidance of the SIP-MOFA PIU. The responsibilities of the various institutions are presented in the table below.

Table 14 Institutional framework

No.	Institution	Responsibility
1.0	Ministry of Food and Agriculture (MoFA)-SIP PIU	• Overall supervision of the ESMF implementation. • Disclosure of the ESMF cleared by the African Development Bank prior to its implementation. • Instruct the regional/district MOFA to carry out screening of subproject activities • Review and take a decision on completed screening checklist forms submitted by the district/regional MOFA. • Confirm involuntary resettlement actions required for a subproject activity. • Hiring of consultants/NGO to prepare ESIA and responsible for subsequent implementation of ESIA.
2.0	MOFA (Regional and district offices)	• Assisting to screen subprojects • Submit input for screening checklist forms to MOFA-SIP PIU. • Develop an MOU between PAPs and MOFA SIP to govern all lands released by farmers/communities for demonstration/test plots. • Assist with ESMF implementation in general • Assist in grievance redress matters

4.0	Environmental Protection Agency (EPA)	• Review completed EPA Form EA 1 submitted to it by the MOFA-SiP Environmental/Social Safeguard Officer on subprojects and advise on level of environmental assessment required • Assist with training and capacity building of other institutions • Assist with external monitoring and evaluation RPF implementation and social impacts
5.0	Lands Commission	• Assist in the valuation of affected properties and compensation due PAPs.
6.0	Water Resources Commission	• The WRC is responsible for granting licenses for any raw water use activity and the implementation of the riparian buffer zone policy.
7.0	MMDAs	• Assist with community awareness creation, notifications and support in the inventory of affected persons and compensation related issues. • Assist in grievance redress matters
8.0	Consultants/Contractors	• Consultants will be engaged to prepare ESIAs if necessary and assist with implementation and capacity building. • Contractors will be engaged to carry out the rehabilitation /renovation works and will have to comply with the ESMF requirements on impacts and mitigation actions
9.0	Development Finance Institution (DFI)- African Development Bank	• To be involved with supervision of the project through periodic implementation support missions to WECARD/CORAF and supervision missions to monitor progress of implementation.

Key description of some key institutions are provided below.

Ministry of Food and Agriculture (MOFA)

The Ministry of Food and Agriculture (MOFA) has established a unit with focus on environmental issues. The Land and Water Management Unit which is under the Crop Services Directorate (CSD) collaborates strongly with the EPA to mainstream environment into policy decisions. MOFA is the government ministry spearheading the SIP effort and SIP-MOFA is playing a coordinating role among all the main stakeholders to ensure project success. The Directorate of Agricultural Extension Services, PPRSD and the regional/district MOFA offices will play key roles to ensure sound implementation of projects to ensure good agricultural practices and environmental sustainability. The environmental and social management capacity at the regional and district MOFA offices will need to be enhanced and utilized for the environmental success of the project.

The Ministry had used a similar arrangement to successfully implement Bank financed projects such as the Northern Rural Growth Program (NRGP), Export Marketing and Quality Awareness Project (EMQAP), and Afram Plains District Agricultural Development Project (APDADP). The Ministry is thus familiar with the Bank's financial management rules, procurement requirements and disbursements procedures. MoFA is already connected to the government integrated financial information management system (GIFMIS), although the system is yet to be fully deployed for all projects. Thus, the PCMU of the proposed project

will adopt the Sun Accounting software of the just completed NRGP for financial accounting and reporting, and migrate to the GIFMIS when the system is fully deployed to projects.

The PCMU staff will be competitively recruited by MOFA and located in the office premises of the Regional Department of Agriculture at Tamale. The staff requirement will include: the Project Coordinator, a Financial Controller, an Accounts Officer, Agronomist, a Monitoring and Evaluation Specialists, an Agribusiness specialist, an Agricultural Engineer and a Procurement Specialist. The services of other experts such as Irrigation specialist, Gender and Nutrition specialist and Environmental specialist will be drawn from regional government institutions. For implementation of nutrition related activities, the PCMU will collaborate with other Government stakeholders including the Ghana Health Services, the Ghana School Feeding Program and the Ghana Education Regional Offices.

Environmental Protection Agency (EPA)

The EPA is responsible for ensuring compliance with laid down ESIA procedures in Ghana in accordance with the EPA Act 1994 (Act 490) and the Environmental Assessment Regulations 1999, and the Agency is expected to give environmental approval for SIP Projects requiring EPA approval. The ESIA is being applied in Ghana to development projects as well as other undertakings as an environmental permitting pre-requisite and a major environmental management tool. The EPA is represented in all the ten (10) regions of the country and will support the project by exercising its permitting and monitoring powers. Though the Agency's technical capacity may be adequate, it is constraint with logistics especially transport which therefore limits its monitoring and enforcement functions.

Water Resources Commission (WRC)

The WRC is responsible for granting licenses for any raw water use activity and the implementation of the riparian buffer zone policy. All project activities requiring such water use license will receive assistance from the WRC and the Commission will also ensure that projects occurring near streams/ water bodies observe the prescribed buffer zone limits.

Lands Commission

The Land Valuation Division (LVD) is the statutory body ensuring that land required for projects are properly acquired and also transparent procedures are followed and fair and adequate compensation paid. Though private firms may be invited to participate in the affected property valuation process, in case of disputes, the LVD would assist to ensure prompt settlement.

Metropolitan/Municipal/District Assemblies (MMDAs)

The MMDAs are the planning authorities, charged with the overall development of the district/municipal/metropolis. Copies of the ESMF will be disclosed at the MMDAs for the public access. The MMDAs will confirm or approve waste disposal sites for contractors and also be involved with grievance redress issues. The Planning Section, Works Department and the Environmental Units of the MMDAs may play relevant roles on behalf of the Assembly, and should be involved in any ESMF training programmes under SIP.

Private sector – Contractors and Engineering Consultants

The contractor to be hired for the rehabilitation/renovation works and construction of new facilities and the engineering consultants to be engaged to supervisor the activities of the various contractors are key

to the successful implementation of the ESMF. ESMF training programmes should identify the key foremen and engineers of contractors/consultants for capacity building.

Table 8.2 provides a summary of the stages and institutional responsibilities for the environmental screening, assessment, approval and implementation of the SIP activities.

Table 15 Summary of Environmental Screening and Assessment Process and Responsibilities

No.	Stage	Institutional responsibility	Implementation responsibility
1.0	Preliminary screening of Infrastructure sub-project to determine their safeguard requirements and also to assist in project formulation using checklist	MOFA	Regional/District MOFA officers and Environmental /Social Safeguard Officer (ESSO)
1.1	Advise on which SIP subprojects to register with the EPA following preliminary screening	EPA	Regional or National EPA
1.2	Statutory Environmental Registration of SIP subproject	SIP PIU/ MOFA	SIP-ESSO
2.0	Determination of appropriate environmental assessment level/ category.	EPA	National EPA
3.0	If ESIA is necessary	EPA/ MOFA	
3.1	Preparation of terms of reference	SIP MOFA	ESSO
3.2	Validation of ESIA/ESMP ToR	EPA/African Development Bank	-
3.3	Selection of Consultant	SIP-MOFA	ESSO/ Procurement Specialist
3.5	Preparation and publication of scoping reports	Consultant	-
3.4	Preparation of ESIA report	Consultant	-
4.0	Review and Approval of ESIA	SIP/EPA/ African Development Bank	SIP ESSO
4.1	Issuance of environmental permit for project implementation	EPA	-
4.2	Public Consultation and disclosure	SIP-MOFA/EPA/ African Development Bank	ESSO/Contractor/ Consultant
5.0	Implementation of ESIA	SIP-MOFA, Contractor	ESSO/ Project implementers
6.0	Surveillance and monitoring	MOFA/EPA/ African Development Bank	ESSO, M&E Specialist, EPA

9.0 REQUIREMENTS FOR TRAINING AND CAPACITY BUILDING FOR ESMF IMPLEMENTATION

The capacity of various government agencies must be adequate to enable them to play their respective roles effectively to achieve the objectives of the project. The competence of these agencies and further requirements to strengthen their capacity to perform environmental and social safeguard functions are described in this section.

Identification of Capacity Building Needs

The first step in pursuing capacity building will be to identify the needs of the various stakeholders. Capacity building should be viewed as more than training. It is human resource development and includes the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively. It also involves organizational development, the elaboration of relevant management structures, processes and procedures, not only within organizations but also the management of relationships between the different organizations and sectors (public, private and community).

The capacity building requirements will mostly be in the form of a training workshop. A training workshop on the ESMF and the African Development Bank operational safeguard policies would be organized for MoFA as well as for crop and livestock farmers and selected community opinion leaders (traditional authorities).

9.1 General Requirements

To attain the SIP objectives will require strengthening the capacity of the Project Implementation Unit (PIU) to: i) co-ordinate the implementation of the ESMF; and ii) provide adequate supervision of the relevant stakeholders in the execution of environmental and social actions on the project, at the national to the local levels. The role of the Social and Environmental Safeguard Specialist currently responsible for SAPIP will be enlarged to include SIP safeguard functions. The experience he has gained with the implementation of the current program will be useful in ensuring that the SIP is successful. Nevertheless, a budget would be available for additional support if that becomes necessary, especially at the peak of the implementation of both projects.

The Safeguard specialist will ensure that the commercial crop and livestock farmers under SIP will go through training programmes to possess adequate competence in safeguards.

9.2 Environmental and Social Awareness, Capacity Building and Training

The training and awareness creation programmes suggested for the SAPIP are further recommended for the SIP. It is proposed that, at the start of the project, a five days' training/awareness program should be organized to involve the Project Implementation Unit, the relevant regional MOFA staff, regional EPA, relevant regional/ municipal/ district assembly staff, selected NGOs etc. The training programme, as outlined below, will aim to provide participants with the basic information/ knowledge to appreciate the safeguard provisions governing the implementation of the SIP projects. This will include the use of screening forms, preparation and implementation of ESMP, EIA, PEA, and other related Plans. They will be exposed to AfDB operational safeguard provisions as relevant to the project and others such as

International Good Practice (FAO, ILO). Furthermore, regular programmes would also be held, as needed, during the programme lifecycle. A provisional programme for a 5-day Training Plan is proposed in **Table 16**:

Table 116: Provisional program for an initial 5-day Training Plan

Target Group		Method
PIU/ SIP; Regional MOFA staff; MOFA extension officers; and Regional/ Municipal/ District Assembly staff	• Environmental and Social (E&S) Awareness; • E&S Impacts Assessment Methods and Process; and • Environmental Legislation, Regulations and Acts.	Workshops, Seminars
Regional MOFA staff; MOFA extension officers; and Commercial crop and livestock farmers	• E&S Management Plan; • Mitigation and Enhancement Measures; • Monitoring and Evaluation; and • E&S Management Budget.	Workshops, Seminars
MOFA extension officers; and Commercial crop and livestock farmers	• E&S Sound Construction Practices; • Sustainable Construction Technology; • Waste Minimization and • Management; • Storage and maintenance of equipment; • Soil Erosion Control; • Transplanting and Planting; and • Construction Site Management Safety Practices.	Workshops, Seminars
MOFA extension officers; and Commercial crop and livestock farmers	• Participatory Resource Management; • Smart agricultural/ Conservation Techniques; and • Record Keeping.	Workshops, Seminars and Site visits

MOFA extension officers and the commercial crop and livestock farmers will be further identified and exposed to best practices in respect of Occupational, Health and Safety (OHS). Training and awareness creation programmes will be designed and implemented as also described under the SAPIP during the design and implementation phases of the projects.

9.3 Technical Assistance (TA)

The TA will be available for in-depth safeguards training which may be led by the AfDB's safeguards specialists and/or consultants with adequate experience in safeguard matters. The latter may assist with the preparation of ESIA, ESMP and other safeguard implementation plans.

10.0 PUBLIC CONSULTATION AND DISCLOSURE

10.1 Relevant Stakeholder Consultations

The ESMF preparation included consultations with relevant stakeholders which included Government agencies, prospective commercial crop and livestock farmers, local communities, Non-governmental organizations etc.

The main objective of the consultation is to discuss potential environmental and social implications and to identify alternatives for consideration. Specifically, the consultations sought to achieve the following:

- To provide some information about the proposed project;
- To provide opportunities for stakeholders to discuss their concerns and offer recommendations;
- To gain insight on the role of each stakeholder in the implementation of the environmental and social safeguards as well as structures in place for the management of the proposed facilities;
- To provide and discuss with stakeholders the alternatives considered to reduce anticipated impacts;
- To identify and verify significance of environmental, social and health impacts; and
- To inform the process of developing appropriate mitigation and management options.

10.2 Stakeholder Consultation Strategy and Plan

Stakeholder consultation is a process and would continue during the project life cycle when various documents including ESIAs/ESMPs will be prepared for site-specific project. **Table 15** summarizes the proposed approach for stakeholder engagement.

Table 17: Stakeholder engagement plan

No.	Activity	Identified Stakeholders	Focus of Consultation/ Engagement	Timelines/ Frequency	Forms of communication	Facilitator	Estimated Cost (US$)
1.	Disclosure of ESMF	• African Development Bank, • Ministry of Food and Agriculture (MoFA), • Regional Coordinating Councils, • Environmental Protection Agency, • Metropolitan, Municipal and District Assemblies	• Potential environmental and social issues of concern from the proposed project's implementation • Compliance with African Development Bank and EPA requirements for the project. • Strategies for mitigating the potential impacts and successful maintenance of the proposed facility during their operation • Public and occupational health and safety at construction sites • Scope of interventions of proposed works for sub-projects. • Project Financing	On submission and acceptance of report	• Newspaper publication • Dissemination of ESMF documents	MoFA	9,600.00
2.	Preparation of ESMP	• Ministry of Food and Agriculture (MoFA)/Project Coordinating and Management Unit, • MMDAs ○ Works Department; ○ Agric. Department; • Project affected persons (PAPs)/institutions • Utility providers e.g. VRA-NEDCo	• Potential environmental and social issues of concern from the proposed project's implementation • Compliance with African Development Bank and EPA requirements for the project. • Strategies for mitigating the potential impacts and successful maintenance of the proposed facility during their operation • Public and occupational health and safety at construction sites • Scope of interventions of proposed works for sub-projects.	Throughout the ESMP study period	• One on one Interviews • Field visitation • Sharing and review of relevant reports • Email and phone calls	Consultants	Captured under Consultancy fee for ESMP preparation
3.	Community engagement prior to construction	• Community/Assembly members • Regional and District directors of Agriculture	• Information on schedule of preparation and construction • Awareness creation on the potential impacts and remedial measures to the community	Two weeks prior to construction	• Community notifications through radio/public address systems.	Project Coordination and Management Unit (PCMU) of SIP made up Project Coordinator, Agronomist, an E & S	5,000.00

No.	Activity	Identified Stakeholders	Focus of Consultation/ Engagement	Timelines/ Frequency	Forms of communication	Facilitator	Estimated Cost (US$)
			• Integration of the ESMP into planning for construction (impacts and mitigation measures) • Grievance redress procedures • Capacity building for stakeholders for the implementation of the ESMP			Monitoring and Evaluation Specialist, An Agribusiness Specialist, Gender Expert, and an Agricultural Engineer.	

4.	Start of construction	• Project affected Persons, Community, and Institutions	• Information on Schedule of construction works, activities and progress of construction
			• Awareness creation on the potential impacts and remedial measures to community
			• Training on ESMP
			  ○ ESMP Implementation (impacts and mitigation measures)
			  ○ Code of Conduct
			• Grievance redress mechanism
			• Review of ESMPs
				Throughout the construction period
				
				18 months after project start
					• General stakeholder meeting for Consultant, and contractor
					• Community notification.
						Project Coordination and Management Unit (PCMU) of SIP made up Project Coordinator, Agronomist, an E & S Monitoring and Evaluation Specialist from the (SESU), An Agribusiness Specialist, Gender Expert, and an Agricultural Engineer	5,000.00

5.	End of construction/ Decommissioning of construction equipment and machinery	• Community/
		• MMDAs:
		  ○ Works Department;
		  ○ Urban Roads Department
		  ○ Health and Sanitation Department
			• Information on Schedule of decommissioning works, activities and progress of decommissioning
			• Awareness creation on the potential impacts and remedial measures to nearby residents and community
			• Training
			  ○ ESMP Implementation (impacts and mitigation measures)
			  ○ Code of Conduct
			• Grievance redress mechanism
				Decommissioning phase	• General stakeholder meeting for Consultant, and contractor
					• Community notification.
						Project Coordination and Management Unit (PCMU) of SIP made up Project Coordinator, Agronomist, an E & S Monitoring and Evaluation Specialist, Social and Environmental Safeguard Specialist, An Agribusiness Specialist, and an Agricultural Engineer	4,000.00

No.	Activity	Identified Stakeholders	Focus of Consultation/ Engagement	Timelines/ Frequency	Forms of communication	Facilitator	Estimated Cost (US$)
6.	Commissioning and handing over of sub-projects	• Community/Project Beneficiaries • MMDAs: ○ Works Department; ○ EPA ○ Urban Roads Department ○ Health and Sanitation Department	• Roles and responsibilities in the O&M • Training on the project Management.	Prior to commissioning	• Community Notification through community radio/public address systems. • Training workshop	Project Coordination and Management Unit (PCMU) of SIP made up Project Coordinator, Agronomist, an E & S Monitoring and Evaluation Specialist, Social and Environmental Safeguard Specialist, An Agribusiness Specialist, and an Agricultural Engineer	3,000.00
7.	Operation and maintenance of sub-projects	• Community/Project beneficiaries	• Public awareness creation/sensitisation on expectations • Operation and Maintenance (O&M) requirements of the Project. • Roles and responsibilities in the O&M • Training on the project Management. • Review of grievance	During operation and maintenance period	• General meeting/Training. • Community engagement	Project Coordination and Management Unit (PCMU) of SIP made up Project Coordinator, Agronomist, an E & S Monitoring and Evaluation Specialist, Social and Environmental Safeguard Specialist, An Agribusiness Specialist, and an Agricultural Engineer	3,000.00
Total Estimated Cost							**29,600.00**

10.3 Stakeholders Consulted

Meetings were held with key officials and opinion leaders to gauge level of awareness and involvement with the project, concerns of project implementation, and to obtain relevant documents or baseline information. The consultations also served to gather information on the mandates and permitting requirements to inform the development of the Programme. In addition, community and gender meetings were held in selected communities to be affected by the SIP. The earlier consultation meetings under the SAPIP projects are still relevant under the SIP and are included in this report to support the proposed mitigation actions.

The list of stakeholders contacted during the preparation of the ESMF is given below with some evidence of consultations while details of the issues discussed are summarized in the **Annex 1**.

Stakeholders consulted include the following:

- Ministry of Food and Agriculture (MoFA), Bolgatanga;
- Environmental Protection Agency (EPA), Tamale;
- Environmental Protection Agency (EPA), Bolgatanga;
- Kasena Nankana Municipal Assembly, Navrongo;
- Central Gonja Municipal Assembly, Buipe;
- Northern Regional Coordinating Council, Tamale;
- Lands Commission, Bolgatanga;
- Kintampo North Municipal Assembly, Kintampo;
- National Disaster and Management Organization (NADMO), Bolgatanga;
- Volta River Authority (VRA)/Northern Electricity Distribution Company (NEDCo), Tamale;
- Ministry of Trade and Industry (MoTI), Bolgatanga;
- Ghana Irrigation Development Authority (GIDA);, Tamale
- Irrigation Company for Upper Regions (ICOUR), Navrongo;
- Farmer Based Groups (FBGs); Tono Irrigation Area, Navrongo; and
    - Men Associations; and
    - Women Associations
- Farmer Based Groups (FBGs); Tamne Irrigation Area, Garu-Tenpane;
    - Men Associations; and
    - Women Associations
- Kukubila/ Nasia Farms- Commercial Crop and Livestock Farm at Kukubila, Savelugu District
- AmaaKyaab Poultry Farm in the Tolon District
- Alhassan farm and Farm Gate Meat- Feed processing, poultry production and Meat processing at Jisonayili, Tamale

Some photographs taken during the stakeholder engagements are presented below:

Plate 5: Mechanization Center on a large scale commercial farm (L) and Kraal (R) at Kukubila, Savelugu District

Plate 6: Large scale poultry farmer (AmaaKyaab Poultry Farm) at Nyirizie in the Tolon District

Plate 7: Feed processing machines and Silos at Alhassan Farm Jisonayili- Tamale

Plate 8: Consultation with GIDA Official, Tamale

Plate 9: Consultation with MoFA, Bolgatanga

Plate 10: Consultation with Officials in Central Gonja Municipal Assembly, Buipe

Plate 11: A Meeting involving Farmer Based Groups at Tono Irrigation Project Site, Korania near Navrongo

Plate 12: A Meeting with Farmer Based Groups and land owners at the Tamne Irrigation Site, Garu, UE/R

10.4 Public Disclosure

The AfDB's policies require that environmental reports are made available to project affected groups, local NGOs, and the public at large. Public disclosure of EIA documents or environmental reports is also a requirement of the Ghana EIA procedures. However, there is no limitation as to the extent and scope of disclosure. MoFA- PIU in collaboration with the line agencies and EPA will make available copies of the ESMF in selected public places as required by law for information and comments. Public notice would be served in the media within a 5- day period on acceptance of the ESMF by AfDB, see Annex 2 for copy of the Notice.

The notification provides the following:

- a brief description of the Project with respect to the SIP objectives;
- a list of venues where the publication and the ESMF report is on display and available for viewing; and
- contact information as e-mails for comments from stakeholders and the public.

MoFA would ensure that the disclosure notice is displayed at all the venues identified and the duration of the display period will be for twenty-one (21) days. The proposed disclosure date is 26th August 2019.

Also, the AfDB will disclose the summary for at least 30 days before taking the project to their Board for approval.

10.5 Measures to Address the Concerns and Proposals Raised by Stakeholders

The main concerns raised by the stakeholders consulted bothered on regulatory, environmental, socio-economic, socio-cultural and livelihoods issues. The ESMF for SIP has taken into account most of the issues and concerns raised by the various stakeholders in sections of the ESMF and indicated appropriate studies and actions during full ESIAs/ESMPs.

The concerns and proposals that were raised by stakeholders during the ESMF consultations would be addressed by the ESMF and the Project as outlined in **Table 18**. However, the overall consensus of the communities engaged indicated broad community support for the project

Table 18: Issues Raised by Relevant Stakeholders

No.	Issues	Approach
1.	Relevant Legal Approvals Permit/Licenses/Certificates by Government Agencies such as EPA, WRC, Lands Commission, and MMDAs	Issue was addressed in Chapter 4 of this ESMF, i.e. Relevant National and Regional Policies and Regulatory Frameworks for Environmental and Social Management
2.	Loss of biological diversity	Issue would be investigated further and addressed by the ecologist during the conduct of full ESIAs and ESMPs
3.	Access to Water Resources	This Issue would be addressed by the water and sanitation components of the project as indicated by the National Policy section. i.e. Water Resources Commission (WRC) Act 1996, Act 522, Water Use Regulation (WUR) 2001, LI 1692.
4.	Loss of Grazing Area.	Issue would be investigated further by the livestock specialist.
5.	Disruption of current Household livelihoods	The social safeguard specialist would investigate impacts associated with change in livelihood activities and strategies and recoomend appropriate mitigation and enhancement measures.
6.	Job Opportunities	The social baseline study to be conducted during full ESIA/ESMP studies would include skills survey of the local population. This issue would be dealt with in accordance with The Labour Act 2003, Act 651
7.	Community Participation	Participation structures and approaches would be presented in the social impact assessment report during full ESIAs/ESMPs for sub-projects
8.	Gender Equity	All regional and district offices have gender desks that would conduct studies to make sure gender equity is achieved by the project.
9.	Involvement of Farmers Associations	The social safeguard specialist of PCMU would conduct studies on social interactions in the communities
10.	Project Costs and Profitability, sustainability.	The design consultant would investigate issues of project cost and profitable and present options in the feasibility study report for each sub-project.

10.6 Grievance Mechanism

Grievance mechanisms provide a formal avenue for affected groups or stakeholders to engage with the project implementers or owners on issues of concern or unaddressed impacts. Grievances are any complaints or suggestions about the way a project is being implemented. They may take the form of specific complaints for damages/injury, concerns about routine project activities, or perceived incidents or impacts. Identifying and responding to grievances supports the development of positive relationships between projects and affected groups/communities, and other stakeholders.

The Funding Agencies usually outline requirements for grievance mechanisms for some projects. Grievance mechanisms should receive and facilitate resolution of the affected institutional or communities' concerns and grievances. The concerns should be addressed promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of affected communities, at no cost and without retribution. Mechanisms should be appropriate to the scale of impacts and risks presented by a project.

Grievances can be an indication of growing stakeholder concerns (real and perceived) and can escalate if not identified and resolved. The management of grievances is therefore a vital component of stakeholder management and an important aspect of risk management for a project.

Projects may have a range of potential adverse impacts to people and the environment in general, identifying grievances and ensuring timely resolution is therefore very necessary. As such the ESMF has developed a grievance management process to serve as a guide during project implementation.

The grievance management guide to be followed by MoFA is provided in **Table 19.** This is consistent with the procedure already developed for the SAPIP. The general steps of the grievance process comprise:

- Registration and receipt of Complaints;
- Determining and Implementing the Redress Action;
- Verifying the Redress Action;
- Monitoring and Evaluation; and
- Dissatisfaction and Alternative Actions.

The grievance redress mechanism should make provision for two tier amicable mediation and settlement. The first tier should involve the grievance redress committee resolving the issue at the district/community level. If the issue is not resolved at the district level, then the 2nd tier should involve the SIP- PIU to constitute an appropriate team including regional/national stakeholders including the Member of Parliament (MP) for the area (or his/her representative) to resolve the matter. When these two tiers of amicable mediation arrangement fail, the complaint is free to seek redress at the court of law.

Table 19: Grievance redress mechanism

Step	Process	Description	Time frame	Other information
1	Identification of grievance	Face to face; phone; letter, e-mail; recorded during public/community interaction; others	1 Day	Email address; hotline number
2	Grievance assessed and logged	• Significance assessed and grievance recorded or logged (i.e. in a log book)	4-7 Days	Significance criteria Level 1 –one off event; Level 2–complaint is widespread or repeated; Level 3- any complaint (one off or repeated) that indicates breach of law or policy or this ESMF/RPF provisions
3	Grievance is acknowledged	Acknowledgement of grievance through appropriate medium	7-14 Days	
4	Development of response	• Grievance assigned to appropriate party for resolution; • Response development with input from management/ relevant stakeholders	4-7 Days 10-14 Days	
5	Response signed off	• Redress action approved at appropriate levels	4-7 Days	MoFA should sign off
6	Implementation and communication of response	• Redress action implemented and update of progress on resolution communicated to complainant	10-14 Days	
7	Complaints Response	• Redress action recorded in grievance log book • Confirm with complainant that grievance can be closed or determine what follow up is necessary	4-7 Days	
8	Close grievance	• Record final sign off of grievance • If grievance cannot be closed, return to step 2 or refer to sector minister or recommend third-party arbitration or resort to court of law	4-7 Days	Chief Director, MoFA
Total Estimated Cost US$:				6,000.00

11.0 ESMF BUDGET

MoFA will seek the assistance of safeguard specialists to improve on its capacity for environmental and social screening and ESMP preparation. The budget for awareness creation, capacity improvement and training programmes for key stakeholders involved in the implementation of the Project is estimated at **US$224,000** as explained in the **Table 20**. The cost of preparing and implementing safeguards instruments for specific projects would depend on the size and location but which are not determined at this stage.

Table 20: Estimated budget to implement ESMF

No.	Activity	Description	Specifications	Unit cost, US$	Total Cost, US$
1.	Public Disclosure of ESMF	Newspaper Preparation and dissemination of ESMF	On acceptance of ESMF by the Bank	-	9,000
2.	Stakeholder Engagement /Awareness creation/GR	Training workshop on ESMF implementation and EIA procedures	2 sessions-year 1 and year 2	10,000	15,000
3.	Screening, Reviewing and Capacity building foR MoFA extension officers and selected farmers	Consulting services, regional and local authorities	Throughout Project lifecycle	-	30,000
4.	ESMP Preparation	Consulting services, regional and local authorities	During Project Implementation	-	80,000
5.	Monitoring and Evaluation Programme	Hiring of consultants and preparation of reports	First 18 months and thereafter every three years. (including monthly and quarterly monitoring)	-	100,000
	Total				**224,000**

CONCLUSION

The Environmental and Social Management Framework (ESMF) has been prepared to establish the mechanism to determine and overcome potential adverse environmental and social impacts originating from the Savannah Investment Programme.

The ESMF will ensure that all projects under the SIP will be carried out sustainably. The proposed environmental and social screening process will enable MoFA to identify and subsequently assess and mitigate potential adverse impacts in accordance with the Government of Ghana statutory instruments, as well as AfDB operational safeguard policies.

The ESMF provides guidance for preparation of the site-specific EIAs/ESMPs which will be required during project implementation. The main expected environmental and social impacts and mitigation/ enhancement measures to meet safeguard requirements include the following:

<u>Involuntary resettlement- land acquisition, population displacement and compensation</u>

Land acquisition and compensation issues

- ✓ Consult affected chief/land owners/users/ communities and seek their consent early in the project development process
- ✓ Allow affected persons to salvage their properties (including crops) before mobilizing to site to start work
- ✓ Ensure fair and adequate compensation is paid to all affected persons prior to commencement of activities as per the provisions of the OS-2 on Involuntary resettlement
- ✓ A formal grievance redress mechanism to be established and implemented
- ✓ Formalise land acquisition through Lands Commission

Maintaining livelihoods

- ✓ Ensure appropriate compensations are paid to PAPs or alternative arrangements made to ensure security of livelihoods in consultation with affected persons;
- ✓ Employment and other opportunities to be given to local communities as much as possible.
- ✓ Portions of land may be given to community members to cultivate in the dry season using the pivoted irrigation system
- ✓ Commercial farmers to assist community members with free tractor services and also access to improved seeds.
- ✓ Cocoa Research Institute of Ghana (CRIG) has recently produced Shea variety which fruits in 3 years instead of the traditional species which matures after 9- 10 years. Educate and encourage farmers on the new variety of shea as a means of also maintaining livelihood

<u>Biodiversity, renewable resources and ecosystem resources</u>

Maintaining biological diversity and ecosystem resource

- ✓ Avoid unnecessary exposure or access to sensitive habitat.
- ✓ Regularly inspect or monitor sensitive areas e.g. swamps/ wetlands in the area prior to start of work and during project.
- ✓ Planting of trees (eg. Cassia) to replace any felled trees
- ✓ Create fire belts around farms

- ✓ Maintain biodiversity corridors and ensure compliance with environmental regulations that prohibit farming in environmentally sensitive areas

Pollution prevention and control, hazardous materials and resource efficiency

Water resources and pollution

- ✓ No work including land clearing to be executed under aggressive weather conditions such as rains or stormy conditions.
- ✓ No solid waste, fuels, or oils to be discharged into any section of a waterway.
- ✓ Land preparation to be done in phases to minimize impacts and exposure of soil, as much as possible.
- ✓ Materials removed from land preparation activities which cannot be used eg. tree stumps and debris will be disposed of appropriately including reuse.
- ✓ Temporary sediment barriers to be installed on slopes to prevent silt from entering water courses.
- ✓ Treatment of feed and poultry processing wastewater to meet EPA standards for effluent discharges prior to release into local water bodies to avoid pollution. For example, through the use of bio-digesters

Air quality and noise

- ✓ Local communities will be duly informed early of all land clearing activities.
- ✓ Loading and transportation of land debris shall be done during daytime and will avoid relatively noisy equipment operating during the night;
- ✓ Speed limit shall be set for vehicles for transportation of any materials within local communities to avoid re- entrainment of dust
- ✓ Adequate road signs to be planted on dust roads to limit vehicular speeds
- ✓ Frequent cleaning of bird brooder house to minimize smell

Generation and disposal of waste

- ✓ Apply the principles of Reduce, Recycle, Reuse and Recover for waste management.
- ✓ Droppings from poultry to be used as manure
- ✓ Feed processing waste to be processed into cake, oil and pellets.
- ✓ Spoiled products (meat) disposed of through accredited waste disposal companies (Zoom lion Company)
- ✓ Install bio-digesters to dispose of birds' feathers and blood

Hazardous wastes

- ✓ Separate hazardous wastes (agrochemical containers, asbestos etc) from all other wastes
- ✓ Liaise with EPA to dispose of hazardous wastes (such as asbestos materials)

Pest management

- ✓ Pest management plan to be prepared to guide the project consistent with other initiatives like SAPIP and GCAP

Resource use efficiency

- ✓ Ensure wise use of energy and water resources

Labour conditions, Health and Safety

Occupational health and safety

- ✓ Engage experienced local community members for land clearing
- ✓ Any contractor engaged to have Health & Safety procedures to guide activities.
- ✓ Ensure there are first aid kits on site and a trained person to administer first aid.
- ✓ Provide and enforce the use of appropriate personal protective equipment (PPE) such as safety boots, hand gloves, nose masks, etc.
- ✓ Apply sanctions where safety procedures are not adhered to.
- ✓ Workers educated on personal and public health issues. Protection eg., condoms provided against sexually transmitted diseases
- ✓ PPEs to be provided for all field workers and usage will be enforced to provide protection against chemicals and also reptiles.
- ✓ All empty agrochemical containers to be physically destroyed and properly disposed of eg. Land burial.

Community health and safety

- ✓ Encourage community leadership to form watch committees to improve security

Hiring of Labour

- ✓ National labour laws to be followed to ensure satisfactory wages as well as working conditions
- ✓ Child labour will not be allowed.
- ✓ Contract agreements will include clauses to emphasize zero tolerance for sexual harassment
- ✓ Workers to have code of conduct as part of their employment letters/ documentation
- ✓ Sanitary facilities to be provided including drinking water

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ANNEXES

Annex 1: Sample of Screening Checklist

Annex 2: Sample of Grievance Redress Form

Annex 3: Stakeholder Consultations

Summary of stakeholder consultations

Stakeholder/ Institution/ Location	Contact Person	Role	Contact No.	Date	Concerns Raised/ Information Received
Regulatory Institutions					
Environmental Protection Agency (EPA)- Tamale	Abu Iddrisu	Northern Regional Director	0501301388	19/09/2017	• The project is an environmental Socio- economic and cultural framework • The project proponent should conduct a Strategic Environmental Assessment (SEA). • There may be destruction of biodiversity because the targeted areas for the project are rich in both flora and fauna biodiversity • There is a possible upsurge in water borne disease such as onchocerciasis, bilharzia, etc. • The project areas have a lot of cattle owners therefore they may settle around the dam due to availability of water • These cattle can trample on the soil which could render the soil unproductive leading to possible issues with food security in the future • Rights and benefits conflicts may arise among communities around the dams • Traditionally, women in the Northern Region are described as time poor so they are given the poor lands • Alternative livelihood activities such as Village Saving and Loans Scheme (VSLS), fish farming, bee keeping, grass cutter rearing, can be encouraged among the women • The project proponent can make a conscious effort to double the buffer zone so as to help limit bush fires and also heavily vegetate it with trees. • The project proponent should make conscious to establish community environmental committee • The grievance redress member committee should constitute only people from the communities • The seven member committee should be made up of the chief, Imam, a pastor, women's leader, men's leader (chairman) and youth leader
EPA- Bolgatanga	Emmanuel Yeboah	Programme Officer	0246223775	20/09/2017	• There are a wide range of environmental concerns related to the construction of dams • The commonest concern is the resettlement plan for individuals whose lands will be affected by the project • When the river basins are dammed, it may affect the flow of water downstream • Erratic rainfall poses a problem to all year round farming in the northern part of the country • The dam construction to ensure availability of water for farming all year round • Per the EPA Act, it is mandatory that an Environmental Impact Assessment is undertaken for the construction of dams

Stakeholder/ Institution/ Location	Contact Person	Role	Contact No.	Date	Concerns Raised/ Information Received
					• The labour to be used should be indicated in the EIA • The stakeholders associated with the project should be duly informed and consulted • The issues of the various communities should be stated in the Scoping report so that they can be addressed in the EIA • EPA monitor the project activities to ensure all permit conditions are followed to the letter • EPA also sensitize farmers on the appropriate use of agrochemicals on irrigable lands • EPA ensures the protection of catchment areas • EPA sensitizes and ensures the planting of trees around the catchment areas through the support of donor organizations
Ministry of Food and Agriculture- Bolgatanga	Rev. John Manu Mary Paula Kogana Zimi Alhassan Patrick Yensingit Timothy Zangina Abukari Yakubu	Reg. Dir. Of Agric RAO-WIAD RAO- Extension RAO- PPRS RAO-SRID RAO- Animal Production	0244533921 0244122608 0240399482 0244592365 0209091274 0205918067	20/09/2017	• The construction of the dam is beneficial to agriculture in the area • The communities around the dam should be made to have a feel of ownership. • MoFA will ensure that water from these dams are used effectively by farmers for crop production and livestock rearing • For the Tono Irrigation Scheme, there are already vibrant women associations such as women in production, women in processing, women in marketing and mechanization services association. • Rice is the dominant crop grown in the area therefore it should be included in the crops intended to be grown under the project • The maintenance of the existing dams is done by the Water Users Association (WUA) which constitute crop farmers, fish farmers and livestock farmers. Land Allocation committee are form within the WUA • MoFA coordinates the WUA so that productive lands are equally given to women • MoFA can assist with monitoring and evaluation of project activities if the project document are made available to them • There are over 86 dams and dugouts in the region • During the preconstruction stage of the dams, MoFA will sensitize the farmers about the pros and cons of the irrigation schemes such as improved food production, flooding and water borne diseases the might sprout up. MoFA will help form the WUA at this stage • MoFA mobilize the people to assist, participate and ensure peace during the construction stage • At the operational phase, MoFA coordinates the land allocation to ensure peace hence preventing possible conflicts

Stakeholder/ Institution/ Location	Contact Person	Role	Contact No.	Date	Concerns Raised/ Information Received
					• Grievances of the farmers are settled by the WUA but only high level issues are channeled to MoFA • Land tenure issues are the major challenges of the irrigation schemes
Kassena Nankana Municipal Assembly- Navrongo	Hon. Williams A. Aduum	Municipal Chief Executive	0244973686	20/09/2017	• Most of the villagers benefit from the Tono Irrigation Scheme • The project proponents need to consider the village committee to help in the land allocation • The project should consider providing a ready market for harvested produce since that is a major problem for the farmers in the area • Unavailable market for harvested products leads to lots of post-harvest losses • Inadequate machines such as combine harvesters to be used in the production process • Inputs such as seeds, fertilizers, seedlings, etc. can be given to the farmers as subsidiaries so that it can encourage more people to go into farming • Improve access roads to farmlands • Communities around the irrigable lands should be given priority when the lands are been allocated • The municipal will assist with the implantation of the project
Central Gonja Municipal Assembly- Buipe	Daniel Kanyage Vuo Ekow Daniel Regina Mensah Neina Fawzia Saani Stephen Agana Inusah Dramani	Dist. Coord. Director NADMO officer Gender Desk Officer Dev't Planning Officer Dep. Physical Planning officer Head, District Works Dept.	020835556 0200610637 0547484090 0244893793 0243203666 0243957885	22/09/2017	• The project has to consider the socio- economic benefits the women, children and disabled people stand to gain before, during and after the project • The erstwhile SADA has developed a master city plan for the Buipe Port. • The plan has outlined a number of projects for interested private investors • The erstwhile SADA has advised the district assembly not to go contrary to the master city plan • The district has earmarked about 100acres of land for the port project from their land use plan • However, the earmarked lands has not been duly acquired by the Volta Lake Transport Company • The government has to consider ways and means that will be used to acquire the land because private investors has shown interest in these lands • Squatters have occupied the earmarked lands, therefore what will happen to them when the project commences? • The government or private investors can build chalets for affected people so they can relocate before the project begin just like a case study in Singapore • The government should also consider the livelihood of the possible project affected persons

Stakeholder/ Institution/ Location	Contact Person	Role	Contact No.	Date	Concerns Raised/ Information Received
					• The influx of outsiders into the community in search of jobs and better livelihoods after the project should also be taken into consideration • Issues likely to come up with the commencement of the project include security problems, health issues, more jobs, food security, teenage pregnancy, etc. • The project is going to serve Ghana locally and the global world.
Northern Regional Coordinating Council (NRCC)	Alhaji Abdul Karim Adam	Reg. Dev't Planning Officer	0245377259	22/09/2017	• The NRCC was informed about the project on Monday,18/09/2017 • Some socio- economic, environmental and cultural issues might be triggered with respect to land acquisition such as destruction of farms, temporal loss of livelihood, etc. • The citizens will ultimately benefit from the project
Lands Commission (LC)-Bolgatanga	Charles Agawa	Reg. Head/ Land Valuation Department	0244535106	20/09/2017	• There should be an instrument from the state for the acquisition of the land • The LC will regularize the land acquisition as well as valuation of the properties existing on the land based on the instrument • This will help identify the possible project affected persons and therefore determine the kind of compensation to be given to them • The two instruments used to acquire the Tono and Vea Lands are the compulsory and vested instruments • Major challenge faced on the Tono and Vea Irrigation schemes is the encroachment on catchments areas around the dam • LC is specifically responsible in managing state lands. Other institutions responsible for managing irrigable lands include ICOUR, traditional authorities and district assemblies. • The LC have radio programmes that create awareness and sensitize people as to how to address land tenure issues.
Kintampo North Municipal Assembly	Goerge Owusu Frimpong Enoch	Mun. Planning Officer Mun. Community Dev't Officer	0209696248 0545433641	22/09/2017	• The municipal is planning to add value to cassava production by producing cassava starch for breweries and plywood companies, cassava pellets, cassava flour and ethanol for breweries. • With a cattle population of about 800,000, the municipal intends to venture into the production of fresh yoghurt using cow milk • The fresh yoghurt production can be done by creating the paddock system for the cattle • This will also help to reduce conflicts between the crop farmers and the cattle herdsmen • There is a ready market available for the fresh yoghurt when it is produced • These plans cannot be implemented with the absence of an irrigation scheme in the municipal • Potential areas for the construction of dams include New Longoro, Telefufuo, Chinranda, and Asantekwa

Stakeholder/ Institution/ Location	Contact Person	Role	Contact No.	Date	Concerns Raised/ Information Received
					• The farmers are unable to farm all year round. • Government institutions that work with the municipal are MoFA, NADMO, and community development. GIDA is not operating in the area • NGOs that assist in the agriculture sector of the municipal are IFAD and USAID • The major challenge with agriculture productivity in the municipal is the conflicts between the crop farmers and cattle herdsmen • Other challenges include; poor or bad access roads to and from farmlands, lack of storage facilities, and cutting of trees for charcoal burning which has affected rainfall pattern and soil fertility • The women are only allowed to own groundnut farms • The chiefs normally addresses grievances between the crop farmers and herdsmen • The municipal security and national security handle these grievances when the chiefs are unable to solve them
National Disaster Management Organisation (NADMO)-Bolgatanga	Paul Wooma	Deputy in Charge of Operations	0206381927	20/09/2017	• NADMO has never been consulted in relation to projects of this nature • Dams should be constructed far from homes because of human security concerns such as possible flooding of homes • The existing dams should be rehabilitated and desilted • NADMO would assist by offering advice to project proponents as to how to address the concerns of project affected persons
VRA/NEDCO- Tamale	Kpalega Stephen	Geomatic Engineer	0246019638	19/09/2017	• VRA ascertain the purpose for the dam construction as to whether it is a hydro power dam or irrigation dam • VRA is concerned about the impacts the construction of the dam will have on adjourning communities • If it is a hydro power dam, VRA would like to know the capacity and help come out with the specifications • They also consider if the power tariffs will be within VRA's budget • For power supply, VRA considers the company to supplied as well as it viability with their systems
Ministry of Trade and Industry(MOTI)-Bolgatanga	Maxwell Ansah	Ag. Reg. Trade Officer	0242001106	20/09/2017	• MOTI is going into a partnership to revamp the Pwalugu Tomato factory to create employment for the youth • MOTI is planning to establish a rice mill in one of the districts • MOTI s also championing the sale of Made in Ghana goods by organizing trade fairs • MOTI recently wrote a proposal indicating upcoming malls will have a solely Made in Ghana stand which help promote and add value to these products

Stakeholder/ Institution/ Location	Contact Person	Role	Contact No.	Date	Concerns Raised/ Information Received
					• MOTI Agencies such as the National Board for Small Scale Industries and GRATIS Foundation train the SMEs on how to advance their business by introducing new technologies such as book keeping.
Ghana Irrigation Development Authority (GIDA)- Tamale	Samuel Agbonoshie	Engineer	0246859455	19/09/2017	• The construction of the Tamne Irrigation scheme is ongoing • Issues with land acquisition is one of the challenges faced with respect to irrigation schemes • Another challenge is the possibility of water to impound nearby lands when there is spillage from the dam • Project affected persons (PAPs) should be compensated. Part of the irrigable lands may be given to PAPs if the project is government owned. • The project proponents must acquire permits from GIDA. However, most projects are government owned therefore no permits has been acquired for them • Most of the women in the area are vegetable farmers on a small scale basis
Irrigation Company for the Upper Regions (ICOUR)- Navrongo	Sebastian Bagina	Ag. Managing Director	0205358328	20/09/2017	• The institution in charge of all public irrigations schemes is GIDA. Other institutions include ICOUR, MoFA, FBOs, GSOP and NGOs such as Advans, IFDC, etc. • The challenge associated with irrigation schemes is conflicts that may arise with respect to land acquisition • Some of the lands have not been duly acquired by the Government • In other countries, an area must have a need for irrigation before a dam is constructed. • Sometimes, the farmers still have ties to their lands because they are not compensated fully for their lands • The irrigation system should be designed properly so that there is equity in water distribution. This will encourage farmers to pay their water levies on time and willingly. • The system should also be designed such that the farmers can pay water levies based on their volumetric water usage, although in the past, they pay based on the number of farm hectares. • The beneficiaries of the project should be made to have a sense of ownership which will propels them to maintain the scheme. • The existing systems have been subsided for farmers, hence limited funds to maintain the system which can lead the system to deteriorate with time. • Formerly, ICOUR used to help the farmers with the production, processing and marketing of their produce. • ICOUR sometimes shut the canal up or allocate farms to contract farmers when farmers refuse to pay water use levies

Stakeholder/ Institution/ Location	Contact Person	Role	Contact No.	Date	Concerns Raised/ Information Received
					• ICOUR also support the farmers to improve production to enable them pay their water use levies • The women are encouraged to farm on the irrigable lands. • About 80-90 percent of crops grown on the irrigable lands is rice. Other crops include chilli pepper, tomatoes, legumes, etc. • The women assist with labour on the farms such as transplanting and also market the produce.
Communities					
Farmers from Korania Village	Clement Kansake Paul Atankwi Goerge Adongo	Nucleus farmer Rice and Tomato farmer Executive member (Tono Irrigation Cooperative Farmers Union- TICFU)	0203044362/ 054847551 0542291600 0506106194	21/09/2017	• FBOs under the Tono Irrigation Scheme include Young Women's Group, Wokpolo group (women), Dual Daani Group (mixed), Peace Farmers Group (men), etc. • In Navrongo, there are about seventy (70no.) FBOs which fall under the Tono Irrigation Cooperative Farmers Union (TICFU). There are sixteen (16no.) FBOs in Korania village. • ICOUR has a land allocation committee that works together with the village committee to allocate lands to farmers • Rice is the major crop grown on the irrigable lands. Other crops include pepper, maize, garden eggs, and okro • The Tono Irrigation Scheme has prevented the people from migrating to other places • Other benefits derived from the scheme include enough funds to pay school fees, health insurance, and also enabled some farmers to build their own homes • The availability of machinery will enable the farmers to grow more crops • Water from the scheme is not enough for all farmers therefore some plots has been cut off • Some farmers use pumps to water to their farms, this makes cropping expensive • Access routes to the farms are poor therefore farmers face difficulty when transporting harvested produce to their homes thereby causing post-harvest losses • There is one thresher in Korania serving over 50farmers in a day. The thresher can only thresh 2 acres of harvested rice in a day • Farmers however hire labour to help with threshing of the rice • Some farmers block the water ways and divert them to irrigate them farmlands which affect most farmers • Another challenge is, water spills onto the road when the dam is closed • Institutions that support the farmers are ICOUR, SARI, MoFA, Advans, IFDC, GBC and TV3 • The women who joined the scheme earlier, have larger portions of land

Stakeholder/ Institution/ Location	Contact Person	Role	Contact No.	Date	Concerns Raised/ Information Received
					• For family lands, the men have larger portion • Bigger portions of land are allocated to the commercial farmers which sometimes discriminates the people from the village
Women Farmers at Korania Village	Janet Atimoliga Ama Tibiru Olivia Banyoma	Secretary- TICFU Rice Farmer Rice Farmer	0246989385 0245373728 0540473208	21/09/2017	• The women have a challenge with harvesting and threshing of rice produce • Inadequate labour to help on the farmers • Formerly, ICOUR used to solely allocate the irrigable lands which used to favour the women • The women are unable to have access to credit such as loans to help them purchase inputs • MoFA provided the farmers with fertilizers this year
Farmers around the Tamne Irrigation System	Akubilla Agindaug Paul Timothy Ayariga Avoka Atiiga Abdulai Yakubu	Kuka Assembly member Community Health Volunteer Landlord (Tingdaana) Agric Officer	0246659439 0245709177 0245375337	21/09/2017	• The communities present at the meeting were; Kugzua, Gagbiri, Gaago, Naabooda, Zuli, Napaadi, Kabiu and Garu • The major crop grown in the area is onions. Others include tomatoes, groundnut, okro, pepper, cabbage, garden eggs, etc. • The construction of the dam will take over lots of the existing lands • Will the farmers be able to grow their usual crops after the dam is construction? • The farmer groups in the area are Agutuga group, Alastaba group, Akiszem group, etc. • The women groups in the area are Atieltaeba women group, Asungtaaba group, Suguru Malis group, etc. • The construction of the Tanme irrigation dam is on-going. • The people in the communities are not fully aware of the project activities such as the communities that are going to be affected. • The people fear the water will affect their lands, farms, houses and health • From a previous meeting that was held, the following were deduced; ➢ The project affected people (PAP) will be compensated ➢ PAP will be given priority during the allocation of irrigable lands ➢ PAP will be feed during the construction period ➢ The health of the people will be duly taken care off • The farmers want to know the mode of compensation, and how soon it will be done since construction is on-going • Some farmlands were destroyed during the sod cutting for the dam construction to create access route to the dam but the PAP have still not been compensated • The people have resolved that their grievances should be addressed before construction continues.

Stakeholder/ Institution/ Location	Contact Person	Role	Contact No.	Date	Concerns Raised/ Information Received
Commercial large scale crop/ livestock farmer	Mallam Seidu	Farm owner	0208114488	19 July 2019	• Commercial farmer: Large scale production of crops and rearing of livestock • Mechanization Center: Keeps and operate series of farm machinery which he uses for his farm and render services to other farmers • An intention to construct a warehouse of about 120 MT to add to an existing 120Mt located in the farm • The Nasia River is the closest natural habitat to the farm • Currently, ploughing and planting are the most dominant activities on the farm • Clearing of the vegetation was done at in the first year. There is planting of cassia each year around the boundary of the farm to replace the trees that were destroyed. • There was an incidence of litigation about 4 years ago. The case was reported to the chief of the community from whom the farmland was allocated. Due process was followed, and the case was solved amicably. • The traditional grievance process thus through the community chief is the most efficient. • Portions of land is given to some community members to cultivate in the dry season using the pivoted irrigation system • Tractor services free of charge to community members. • Provision of improved seed to some farmers • Hired labour earns them income • The use of the pivot irrigation system in the dry season does not affect significantly the volume of water in the river hence has no impact to the community
Amaakyaab Poultry Farm	Mr and Mrs Akangannang	Owners		18 July 2019	• Poultry Farming: to reduce the importation of meat, improve nutrition of citizens and increase his income • Structures have already been established hence no movement of earth nor land cover • The activities in progress in the farm is the rearing of exotic layers of 1,128 and 520 quails for eggs. The birds will however be sold after two years. • The droppings are used by community members as manure to improve upon soil fertility. • The droppings from the birds despite the frequent cleaning of the brooder house produces significant smell that pollutes the air. It is equally obvious that the birds make a lot of noise especially when laying. • The land and structures available can house about 10,000 birds.

Stakeholder/ Institution/ Location	Contact Person	Role	Contact No.	Date	Concerns Raised/ Information Received
					• The channel of grievance redress is through the Landowner to the chief who would have sighed the documents for the land as witness • The farm has employed two permanent labour, the droppings is collected free for manuring which increases yield, eggs is sold to them to improve upon their nutritional status Major challenges include: o Source of water for the biggest challenge to the farm. o There is a big underground tank which harvest rainwater during the dry season however this does not meet their water needs. o Marketing of the broilers and even the layers is a challenge.
Alhassan Farm and Farm Gate Meat	Alhassan		0200954523	18 July 2019	• Activities include Feed Processing, Poultry production and Meat Processing • The land was acquired on a leased basis. • There is provision of first aid box with basic health requirements • The project relies on adding toxic binder to the feed to hold the toxin together. • Propionic acid also added to the feed to control the growth of toxin from one level to another. • A cooker attached to the feed processing machine produces steam at a stage of the feed production to kill all pathogens. • The machines for both meat and feed processing machines produce very little smoke and minimal noise which do not disturb other neighbors. • Every bit of the feed is used up, cake, oil and pellets. • Spoiled meat is usually conveyed by Zoom lion for disposal • The feathers and blood are poured in to a biodigester Major challenges include: • Market for both processed meat and feed • Mixer to support feed production • Grain quality is mostly bad